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REMARKS

In this communication, Applicants have amended Claims 1, 22, 25, and 53, and canceled Claims 2, 10, 23 and 27. No new matter has been introduced. Claims 1, 3-9, 11-22, 24-26, 28-67 are pending. Allowance of all pending claims is respectfully requested.

Rejections under 35 U.S.C. § 112

Claims 1, 4-9, 12-22 and 27 stand rejected under 35 U.S.C. § 112, first paragraph, for reasons stated on page 3 of the Office Action. Specifically, the Office Action alleges that the specification enables the use of “quaternary onium polymers” defined by the formula of Claim 2, but does not reasonably provide enablement for the preparation and use of all possible types of “quantum yield enhancing materials.”

In order to expedite prosecution, Applicants have amended independent Claims 1 and 22 to recite “quantum yield enhancing material comprising a quaternary onium polymer” Claim 27 has been canceled. The rejection to Claim 27 is now moot.

Taken together, it is believed that the grounds for the rejection has been obviated by the amendment. Withdrawal of the 35 U.S.C. § 112, first paragraph, rejection to Claims 1, 4-9, 12-22 and 27 is respectfully requested.

Claims 25-31 stand rejected under 35 U.S.C. § 112, first paragraph, for reasons stated on page 3 of the Office Action. Specifically, the Office Action alleges that there is no enabling written description in the specification for the term “quantum yield enhancing compounds” in Claim 25 and the term “a quaternary onium compound” of the formula shown in Claim 27. Claim 27 has been canceled and its limitations has been incorporated into the amended Claim 25. Applicants respectfully submit that the quaternary onium compound of the formula shown in original Claim 27 is supported by the specification.

To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the

inventor had possession of the claimed invention Vas-Cath, Inc. v. Mahurkar, 19 USPQ2d 1111, 1116 (Fed. Cir. 1991). With respect to the original claims, there is a strong presumption that an adequate written description of the claimed invention is present when the application is filed. In re Wertheim, 191 USPQ 90, 97 (CCPA 1976).

In the instant application, Figures 6 and 7 show formulas that are similar to the formula in Claim 27. The specification provides that although a primary amino functional group 66 is shown in Figure 6, a secondary amino group can also be used. (page 23, lines 20-21). The specification further provides that the substituent R on the amino group in Figure 7 can be a hydrogen, an alkyl, a benzyl or an aryl group (page 24, lines 5-6). These teachings properly describe the secondary amine in the formula of Claim 27. Moreover, the specification provides that “Q” in Fig. 6. may be a nitrogen or a phosphorus (page 23, line 22), and Figures 6 and 7 show a quaternary onium compound 60 in which the positively charged onium moiety 62 is attached to a link arm 64 and to other three moieties shown by three bonds. Applicants respectfully submit that the above-described teachings, combined with the general formula of quaternary onium on page 17 and in original Claim 27 which is part of the specification, provides proper written description for the formula of the quaternary onium compound in the amended Claim 25. Withdrawal of the rejection under 35 U.S.C. § 112, first paragraph, is respectfully requested.

Claims 1-5, 7-13, 15 and 16 stand rejected under 35 U.S.C. § 112, first paragraph, for reasons stated on page 4 of the Office Action. Specifically, the Office Action alleges that there is no written description in the specification of a solid support in which the “probes” are “ionically” attached to a surface of the solid support. Applicants respectfully traverse the rejection.

The term “ionically” is present in the original Claim 1. With respect to the original claims, there is a strong presumption that an adequate written description of the claimed invention is present when the application is filed. The PTO has the initial burden of presenting evidence or reasons why persons skilled in the art would not recognize in the disclosure a

description of the invention defined by the claims. In re Wertheim, 191 USPQ 90, 97 (CCPA 1976).

The specification provides that the surface of the solid support may contain anionic or cationic groups to bind probes (see, e.g., page 12, lines 19-21). The specification also provides that the probes can be nucleic acid or antibody (page 11, lines 7-8). It is well known to one skilled in the art that nucleic acid and antibody (a protein) are charged molecules capable of ionic interaction with other anionic or cationic groups. Accordingly, Applicants respectfully submit that, in view of specification and the original claims, a person skilled in the art would recognize that the “probe” can be “ionically” attached to a surface of the solid support. Withdrawal of the rejection under 35 U.S.C. § 112, first paragraph, is respectfully requested.

Claims 1-6 and 9-31 stand rejected under 35 U.S.C. § 112, first paragraph, for reasons stated on page 4 of the Office Action. Specifically, the Office Action alleges that there is no description nor definition in the specification for the term “target” in Claim 1. Applicants respectfully traverse the rejection.

The term “target” has been described in a number of places in the specification. The specification provides, for example, that “[t]he polymeric support material can comprise a porous polyamide membrane containing surface functional groups capable of binding probes for nucleic acid targets....” (page 7, lines 6-9); that “[p]otential methods for activation functional membrane surfaces so they can be bound with probes that can hybridize nucleic acid targets are shown in FIGS. 2A and 2B” (page 12, lines 1-2); and that “a solid support... can be made by a method comprising steps of:... applying a plurality of probes for a biopolymer target...” (page 14, lines 2-7). In addition, the term “probe,” when used in a biology context, means “[a] substance, such as DNA, that is radioactively labeled or otherwise marked and used to detect or identify another substance in a sample”, The American Heritage® Dictionary of the English Language, Fourth Edition. One skilled in the art would understand that the “target” of a probe is the substance to be identified or detected by the probe.

Accordingly, Applicants respectfully submit that, in view of specification and the original claims, a person skilled in the art would recognize that the “target” of a “probe” can be a nucleic acid, a biopolymer, or any molecules that the “probe” is designed to detect or identify.

Withdrawal of the rejection under 35 U.S.C. § 112, first paragraph, is respectfully requested.

Claims 22-24 stand rejected under 35 U.S.C. § 112, second paragraph, for reasons stated on page 4 of the Office Action. Specifically, the Office Action alleges that it is unclear what is meant by the term “a component of an analyte.” Claim 22 has been amended to replace the term “a component of an analyte” with the term “an analyte.” It is believed that the ground of the rejection has been obviated and withdrawal of the 35 U.S.C. § 112, second paragraph rejection is respectfully requested.

Rejections under 35 U.S.C. § 102/103

Claims 1-31 and 53-58 stand rejected under 35 U.S.C. § 102(b)/103 as being anticipated by or obvious over U.S. Patent No. 5,849,495 to Bronstein et al. (hereinafter “Bronstein I”) for reasons stated on pages 5-6 of the Office Action. Applicants respectfully traverse the rejection.

For anticipation under 35 U.S.C. §102, the reference “must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present, MPEP §706.02. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.”, Verdegaal Bros. v. Union Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Independent Claim 1 is directed to a solid support for chemiluminescent assays comprising a chemiluminescent quantum yield enhancing material comprising a quaternary onium polymer, and a plurality of probes for a biopolymer target, wherein the probes are covalently, ionically or physically attached to a surface of the solid support.

Bronstein I describes a chemiluminescent assay for the determination of the presence or amount of a biopolymer in bound assays using 1,2-dioxetanes in connection with AttoPhos™ as chemiluminescent substrates for enzyme-labeled targets or probes. Bronstein I describes coating a membrane with copolymers containing pendant onium groups, but does not teach or suggest attaching probes to the membrane. Accordingly, Bronstein I does not teach every aspect of the invention of Claim 1 and therefore, does not anticipate Claim 1.

The same reasoning applies to the rejection under 35 U.S.C. § 103. As described above, Bronstein I does not teach or suggest attaching probes to the membrane. Moreover, Bronstein I teaches using the membrane in a Western Blot, in which case the biopolymer target, not the probe, is attached to the membrane. Therefore, Bronstein I is in fact teaching away from the invention of Claim 1.

Independent Claims 22, 25 and 53, as amended, all relate to a solid support having probes attached to its surface. As discussed in our analysis of Claim 1, Bronstein I does not teach or suggest attaching a probe to the surface of the solid support. Accordingly, Applicants respectfully submit that independent Claims 1, 22, 25 and 53 are not anticipated or rendered obvious by Bronstein I. Applicants further submit that Claims 2-21, 23-24, 26-31, and 54-58 are not anticipated or rendered obvious by Bronstein I because they depend from Claims 1, 22, 25 and 53, respectively. Withdrawal of the 35 U.S.C. §102/103 rejection is respectfully requested.

Claims 1-4, 8, 22-24 and 53-58 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,336,596 to Bronstein et al. (hereinafter “Bronstein II”) for reasons stated on page 6 of the Office Action. Applicants respectfully traverse the rejection.

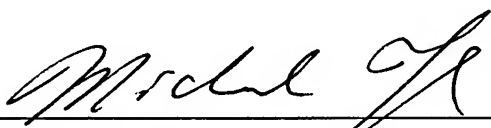
Bronstein II describes a polymer containing pendant onium groups for use in biological assays. The polymer may be used as the membrane or as a coating on other supports. Similar to Bronstein I, Bronstein II does not teach or suggest attaching probes to the membrane or other support. The Office Action cited column 10 “Detection of Proteins; Western Blotting” as support for coating the solid support with a probe. Applicants respectfully submit that in a Western Blot,

the solid support is attached to the biopolymer target, but not to the probe. Accordingly, Applicants respectfully submit that independent Claims 1, 22, and 53 are not anticipated by Bronstein II. Applicants further submit that Claims 2-3, 8, 23-24, and 54-58 are not anticipated by Bronstein II because they depend from Claims 1, 22, and 53, respectively. Withdrawal of the 35 U.S.C. § 103 rejection is respectfully requested.

In view of the foregoing remarks, favorable reconsideration of all pending claims is requested. Applicants respectfully submit that this application is in condition for allowance and requests that a notice of allowance be issued. Should the Examiner believe that anything further is required to expedite the prosecution of this application or further clarify the issues, the Examiner is requested to contact Applicants' representative at the telephone number listed below.

Respectfully submitted,

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FULL TEXT OF CASES (USPQ2D)

All Other Cases

Vas-Cath Inc. v. Mahurkar (CA FC) 19 USPQ2d 1111 (6/7/1991)

Vas-Cath Inc. v. Mahurkar (CA FC) 19 USPQ2d 1111

Vas-Cath Inc. v. Mahurkar

U.S. Court of Appeals Federal Circuit
19 USPQ2d 1111

Decided June 7, 1991

Nos. 90-1528, 91-1032

Headnotes

JUDICIAL PRACTICE AND PROCEDURE

1. Procedure - Summary judgment - In general (§ 410.3301)

Procedure - Judicial review - Standard of review - In general (§ 410.4607.01)

Court of appeals, in reviewing grant of summary judgment, is not bound by federal district court's holding that no material facts are in dispute, and must make independent determination as to whether standards for summary judgment have been met.

PATENTS

2. Patentability/Validity - Specification - Written description (§ 115.1103)

"Written description" of invention required by first paragraph of 35 USC 112 is separate and distinct from that paragraph's requirement of enabling disclosure, since description must do more than merely provide explanation of how to "make and use" invention; applicant must also convey, with reasonable clarity to those skilled in art, that applicant, as of filing date sought, was in possession of invention, with invention being, for purposes of "written description" inquiry, whatever is presently claimed.

3. Practice and procedure in Patent and Trademark Office - Prosecution - Drawings **(§ 110.0920)**

Patentability/Validity - Specification - Written description **(§ 115.1103)**

Drawings alone may, under proper circumstances, provide "written description" of invention required by 35 USC 112, and whether drawings are from design application or utility application is not determinative.

4. Patentability/Validity - Specification - Written description **(§ 115.1103)**

Federal district court erred by requiring drawings from design patent application to "describe what is novel or important" about invention in order to satisfy "written description" requirement of 35 USC 112 for later-filed utility patent on double lumen catheter having combination of features, since there is no legally cognizable or protected "essential" element, "gist" or "heart" of invention in combination patent; rather, invention is defined by claims under consideration.

5. Patentability/Validity - Specification - Written description **(§ 115.1103)**

Federal district court erred by considering patents granted to applicant after utility patents containing claims in question in determining whether drawings from design application satisfy "written description" requirement of 35 USC 112 for those claims, since later patenting of inventions having different specifications is irrelevant to determination of Section 112 sufficiency of application in question, which must be judged as of its filing date.

6. Patentability/Validity - Specification - Written description **(§ 115.1103)**

Federal district court erred by imposing legal standard that essentially required drawings from design application for double lumen catheter to necessarily exclude all diameters of lumens, other than those within range specified by subsequently-filed utility claims, in order to satisfy "written description" requirement of 35 USC 112 for those claims, since proper test is whether drawings conveyed, with reasonable clarity to those of ordinary skill in art, that applicant had in fact invented catheter having return lumen of diameter within claimed range; defendant's submission of expert's declaration stating that person of ordinary skill viewing drawings would be able to derive claimed range therefrom, and plaintiff's failure to refute such declaration, therefore gave rise to genuine issue of material fact inappropriate for summary disposition.

Particular patents - General and mechanical - Catheters

4,568,329, Mahurkar, double lumen catheter, summary judgment of invalidity reversed.
4,692,141, Mahurkar, double lumen catheter, summary judgment of invalidity reversed.

Case History and Disposition:

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Appeal from the U.S. District Court for the Northern District of Illinois, Easterbrook, J.; 17 USPQ2d 1353.

Action by Vas-Cath Inc. and Gambro Inc. against Sakharam D. Mahurkar and Quinton Instruments Co., for declaratory judgment of patent non-infringement, in which defendants counterclaim for patent infringement. From entry of summary judgment holding patents invalid, defendants appeal. Reversed and remanded.

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Raymond P. Niro, of Niro, Scavone, Haller & Niro, Chicago, Ill. (Joseph N. Hosteny and John C. Janka, with him on brief; Michael P. Mazza, of counsel); Michael J. Sweedler, of Darby & Darby, New York, N.Y., for defendants-appellants.

Judge:

Before Rich, Michel, and Plager, circuit judges.

Opinion Text

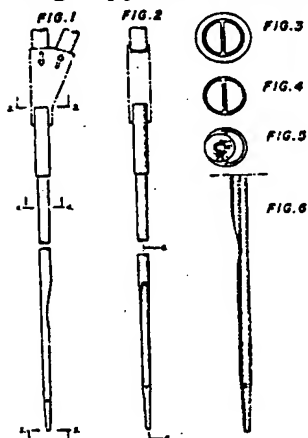
Opinion By:

Rich, J.

Sakharam D. Mahurkar and Quinton Instruments Company (collectively Mahurkar) appeal from the September 12, 1990 partial final judgment 1 of the United States District Court for the Northern District of Illinois, Easterbrook, J., sitting by designation, in Case No. 88 C 4997. Granting partial summary judgment to Vas-Cath Incorporated and its licensee Gambro, Inc. (collectively Vas-Cath), the district court declared Mahurkar's two United States utility patents Nos. 4,568,329 ('329 patent) and 4,692,141 ('141 patent), titled "Double Lumen Catheter," invalid as anticipated under 35 USC 102(b). In reaching its decision, reported at 745 F.Supp. 517, 17 USPQ2d 1353, the district court concluded that none of the twenty-one claims of the two utility patents was entitled, under 35 USC 120, to the benefit of the filing date of Mahurkar's earlier-filed United States design patent application Serial No. 356,081 ('081 design application), which comprised the same drawings as the utility patents, because the design application did not provide a "written description of the invention" as required by 35 USC 112, first paragraph. We *reverse* the grant of summary judgment with respect to all claims.

BACKGROUND

Sakharam Mahurkar filed the '081 design application, also titled "Double Lumen Catheter," on March 8, 1982. The application was abandoned on November 30, 1984. Figures 1-6 of the '081 design application are reproduced at right [below].



As shown, Mahurkar's catheter comprises a pair of tubes (lumens) designed to allow blood to be

removed from an artery, processed in an apparatus that removes impurities, and returned close to the place of removal. Prior art catheters utilized concentric circular lumens, while Mahurkar's employs joined semi-circular tubes that come to a single tapered tip. Advantageously, the puncture area of Mahurkar's semicircular catheter is 42% less than that of a coaxial catheter carrying the same quantity of blood, and its conical tip yields low rates of injury to the blood. The prior art coaxial catheters are now obsolete; Mahurkar's catheters appear to represent more than half of the world's sales. 745 F.Supp. at 520, 17 USPQ2d at 1353-54.

After filing the '081 design application, Mahurkar also filed a Canadian Industrial Design application comprising the same

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drawings plus additional textual description. On August 9, 1982, Canadian Industrial Design 50,089 (Canadian '089) issued on that application.

More than one year later, on October 1, 1984, Mahurkar filed the first of two utility patent applications that would give rise to the patents now on appeal. Notably, both utility applications included the same drawings as the '081 design application. 2 Serial No. 656,601 ('601 utility application) claimed the benefit of the filing date of the '081 design application, having been denominated a "continuation" thereof. In an Office Action mailed June 6, 1985, the Patent and Trademark Office (PTO) examiner noted that "the prior application is a design application," but did not dispute that the '601 application was entitled to its filing date. On January 29, 1986, Mahurkar filed Serial No. 823,592 ('592 utility application), again claiming the benefit of the filing date of the '081 design application (the '592 utility application was denominated a continuation of the '601 utility application). In an office action mailed April 1, 1987, the examiner stated that the '592 utility application was "considered to be fully supported by applicant's parent application SN 356,081 filed March 8, 1982 [the '081 design application]." The '601 and '592 utility applications issued in 1986 and 1987, respectively, as the '329 and '141 patents, the subjects of this appeal. The independent claims of both patents are set forth in the Appendix hereto.

Vas-Cath sued Mahurkar in June 1988, seeking a declaratory judgment that the catheters it manufactured did not infringe Mahurkar's '329 and '141 utility patents. 3 Vas-Cath's complaint alleged, inter alia, that the '329 and '141 patents were both invalid as anticipated under 35 USC 102 (b) by Canadian '089. Vas-Cath's anticipation theory was premised on the argument that the '329 and '141 patents were not entitled under 35 USC 120 4 to the filing date of the '081 design application because its drawings did not provide an adequate "written description" of the claimed invention as required by 35 USC 112, first paragraph.

Mahurkar counterclaimed, alleging infringement. Both parties moved for summary judgment on certain issues, including validity. For purposes of the summary judgment motion, Mahurkar conceded that, if he could not antedate it, Canadian '089 would represent an enabling and thus anticipating §102(b) reference against the claims of his '329 and '141 utility patents. 745 F.Supp. at 521, 17 USPQ2d at 1355. Vas-Cath conceded that the '081 design drawings *enabled* one skilled in the art to practice the claimed invention within the meaning of 35 USC 112, first paragraph. *Id.* Thus, the question before the district court was whether the disclosure of the '081 design application, namely, the drawings without more, adequately meets the "written description" requirement also contained in §112, first paragraph, so as to entitle Mahurkar to the benefit of the 1982 filing date of the '081 design application for his two utility patents and thereby antedates Canadian '089.

Concluding that the drawings do not do so, and that therefore the utility patents are anticipated by Canadian '089, the district court held the '329 and '141 patents wholly invalid under 35 USC 102(b), *id.* at 524, 17 USPQ2d at 1358, and subsequently granted Mahurkar's motion for entry of a partial final judgment under Fed.R.Civ.P. 54(b) on the validity issue. This appeal followed.

DISCUSSION

The issue before us is whether the district court erred in concluding, on summary judgment, that the disclosure of the '081 design application does not provide a §112, first paragraph "written description" adequate to support each of the claims of the '329 and '141 patents. If the court so erred as to any of the 21 claims at issue, the admittedly anticipatory disclosure of Canadian '089 will have

been antedated (and the basis for the court's

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grant of summary judgment nullified) as to those claims.

[1] In reviewing the district court's grant of summary judgment, we are not bound by its holding that no material facts are in dispute, and must make an independent determination as to whether the standards for summary judgment have been met. *C.R. Bard, Inc. v. Advanced Cardiovascular Systems*, 911 F.2d 670, 673, 15 USPQ2d 1540, 1542-43 (Fed. Cir. 1990). Summary judgment will not lie if the dispute about a material fact is "genuine," that is, if the evidence is such that a reasonable jury could return a verdict for the nonmoving party. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986).

The "Written Description" Requirement of §112

The first paragraph of 35 USC 112 requires that

he specification shall contain *a written description of the invention*, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

(Emphasis added). Application of the "written description" requirement, derived from the portion of §112 emphasized above, is central to resolution of this appeal. The district court, having reviewed this court's decisions on the subject, remarked that "[u]nfortunately, it is not so easy to tell what the law of the Federal Circuit is." 745 F.Supp. at 522, 17 USPQ2d at 1356. Perhaps that is so, and, therefore, before proceeding to the merits, we review the case law development of the "written description" requirement with a view to improving the situation. 5

The cases indicate that the "written description" requirement most often comes into play where claims not presented in the application when filed are presented thereafter. Alternatively, patent applicants often seek the benefit of the filing date of an earlier-filed foreign or United States application under 35 USC 119 or 35 USC 120, respectively, for claims of a later-filed application. The question raised by these situations is most often phrased as whether the application provides "adequate support" for the claim(s) at issue; it has also been analyzed in terms of "new matter" under 35 USC 132. The "written description" question similarly arises in the interference context, where the issue is whether the specification of one party to the interference can support the claim(s) corresponding to the count(s) at issue, i.e., whether that party "can make the claim" corresponding to the interference count.

To the uninitiated, it may seem anomalous that the first paragraph of 35 USC 112 has been interpreted as requiring a separate "description of the invention," when the invention is, necessarily, the subject matter defined in the *claims* under consideration. See *In re Wright*, 866 F.2d 422, 424, 9 USPQ2d 1649, 1851 (Fed. Cir. 1989). One may wonder what purpose a separate "written description" requirement serves, when the second paragraph of §112 expressly requires that the applicant conclude his specification "with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."

One explanation is historical: the "written description" requirement was a part of the patent statutes at a time *before* claims were required. A case in point is *Evans v. Eaton*, 20 U.S. (7 Wheat.) 356 (1822), in which the Supreme Court affirmed the circuit court's decision that the plaintiff's patent was "deficient," and that the plaintiff could not recover for infringement thereunder. The patent laws then in effect, namely the Patent Act of 1793, did not require claims, but did require, in its 3d section, that the patent applicant "deliver a written description of his invention, and of the manner of using, or process of compounding, the same, in such full, clear and exact terms, as to distinguish the same from all things before known, and to enable any person skilled in the art or science of which it is a branch, or with which it is most nearly connected, to make, compound and use the same...." *Id.* at 430. In view of this language, the Court concluded that the specification of a patent had two objects, the first of which was "to enable artizans to make and use [the invention]. ..." *Id.* at 433. The second object of the specification was

to put the public in possession of what the party claims as his own invention, so as to ascertain if he

claims anything that is in common use, or is already known, and to guard against prejudice or injury from the use of an invention which the party may otherwise innocently suppose not to be

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patented. It is, therefore, for the purpose of warning an innocent purchaser, or other person using a machine, of his infringement of the patent; and at the same time, of taking from the inventor the means of practising upon the credulity or the fears of other persons, by pretending that his invention is more than what it really is, or different from its ostensible objects, that the patentee is required to distinguish his invention in his specification.

Id. at 434.

A second, policy-based rationale for the inclusion in §112 of both the first paragraph "written description" and the second paragraph "definiteness" requirements was set forth in *Rengo Co. v. Molins Mach. Co.*, 657 F.2d 535, 551, 211 USPQ 303, 321 (3d Cir.), *cert. denied*, 454 U.S. 1055 (1981):

here is a subtle relationship between the policies underlying the description and definiteness requirements, as the two standards, while complementary, approach a similar problem from different directions. Adequate description of the invention guards against the inventor's overreaching by insisting that he recount his invention in such detail that his future claims can be determined to be encompassed within his original creation. The definiteness requirement shapes the future conduct of persons other than the inventor, by insisting that they receive notice of the scope of the patented device.

With respect to the first paragraph of §112 the severability of its "written description" provision from its enablement ("make and use") provision was recognized by this court's predecessor, the Court of Customs and Patent Appeals, as early as *In re Ruschig*, 379 F.2d 990, 154 USPQ 118 (CCPA 1967). Although the appellants in that case had presumed that the rejection appealed from was based on the enablement requirement of §112, *id.* at 995, 154 USPQ at 123, the court disagreed:

he question is not whether [one skilled in the art] would be so enabled but whether the specification discloses the compound to him, specifically, *as something appellants actually invented*. ... If [the rejection is] based on section 112, it is on the requirement thereof that "The specification shall contain a written description *of the invention * * **" (Emphasis ours.)

Id. at 995-96, 154 USPQ at 123 (first emphasis added). The issue, as the court saw it, was one of fact: "Does the specification convey clearly to those skilled in the art, to whom it is addressed, in any way, the information that appellants invented that specific compound [claimed]?" *Id.* at 996, 154 USPQ at 123.

In a 1971 case again involving chemical subject matter, the court expressly stated that "it is possible for a specification to *enable* the practice of an invention as broadly as it is claimed, and still not *describe* that invention." *In re DiLeone*, 436 F.2d 1404, 1405, 168 USPQ 592, 593 (CCPA 1971) (emphasis added). As an example, the court posited the situation "where the specification discusses *only* compound A and contains *no* broadening language of any kind. This might very well enable one skilled in the art to make and use compounds B and C; yet the class consisting of A, B and C has not been described." *Id.* at 1405 n.1, 168 USPQ 593 n.1 (emphases in original). *See also In re Ahlbrecht*, 435 F.2d 908, 911, 168 USPQ 293, 296 (CCPA 1971) (although disclosure of parent application may have *enabled* production of claimed esters having 2-12 methylene groups, it only *described* esters having 3-12 methylene groups).

The CCPA also recognized a subtle distinction between a written description adequate to *support* a claim under §112 and a written description sufficient to *anticipate* its subject matter under §102(b). The difference between "claim-supporting disclosures" and "claim-anticipating disclosures" was dispositive in *In re Lukach*, 442 F.2d 967, 169 USPQ 795 (CCPA 1971), where the court held that a U.S. "grandparent" application did not sufficiently describe the later-claimed invention, but that the appellant's intervening British application, a counterpart to the U.S. application, anticipated the claimed subject matter. As the court pointed out, "the description of a single embodiment of broadly claimed subject matter constitutes a description of the invention for anticipation purposes ..., whereas the same information in a specification might not alone be enough to provide a description of that invention for purposes of adequate disclosure...." *Id.* at 970, 169 USPQ at 797 (citations omitted).

The purpose and applicability of the "written description" requirement were addressed in *In re Smith and Hubin*, 481 F.2d 910, 178 USPQ 620 (CCPA 1973), where the court stated: Satisfaction of the description requirement insures that subject matter presented in the form of a claim subsequent to the filing date of the application was sufficiently disclosed at the time of filing so that the prima facie date of invention can fairly be held to be the filing date of the application. This concept applies whether

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the case factually arises out of an assertion of entitlement to the filing date of a previously filed application under §120 ... or arises in the interference context wherein the issue is support for a count in the specification of one or more of the parties ... or arises in an ex parte case involving a single application, but where the claim at issue was filed subsequent to the filing of the application... *Id.* at 914, 178 USPQ at 623-24 (citations omitted).

The CCPA's "written description" cases often stressed the fact-specificity of the issue. *See, e.g., In re Wertheim*, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976) ("The primary consideration is *factual* and depends on the nature of the invention and the amount of knowledge imparted to those skilled in the art by the disclosure") (emphasis in original); *In re Smith*, 458 F.2d 1389, 1395, 173 USPQ 679, 683 (CCPA 1972) ("Precisely how close the description must come to comply with §112 must be left to case-by-case development"); *DiLeone*, 438 F.2d at 1405, 168 USPQ at 593 ("What is needed to meet the description requirement will necessarily vary depending on the nature of the invention claimed"). The court even went so far as to state:

it should be readily apparent from recent decisions of this court involving the question of compliance with the description requirement of §112 that each case must be decided on its own facts. Thus, the precedential value of cases in this area is extremely limited.

In re Driscoll, 562 F.2d 1245, 1250, 195 USPQ 434, 438 (CCPA 1977).

Since its inception, the Court of Appeals for the Federal Circuit has frequently addressed the "written description" requirement of §112. A fairly uniform standard for determining compliance with the "written description" requirement has been maintained throughout: "Although [the applicant] does not have to describe exactly the subject matter claimed, ... the description must clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (citations omitted). "[T]he test for sufficiency of support in a parent application is whether the disclosure of the application relied upon 'reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter.'" *Ralston Purina Co. v. Far-Mar-Co, Inc.*, 772 F.2d 1570, 1575, 227 USPQ 177, 179 (Fed. Cir. 1985) (quoting *In re Kaslow*, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983)). Our cases also provide that compliance with the "written description" requirement of §112 is a question of fact, to be reviewed under the clearly erroneous standard. *Gosteli*, 872 F.2d at 1012, 10 USPQ2d at 1618; *Utter v. Hiraga*, 845 F.2d 993, 998, 6 USPQ2d 1709, 1714 (Fed. Cir. 1988).

There appears to be some confusion in our decisions concerning the extent to which the "written description" requirement is separate and distinct from the enablement requirement. For example, in *In re Wilder*, 736

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F.2d 1516, 1520, 222 USPQ 369, 372 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 1209 (1985), we flatly stated: "The description requirement is found in 35 U.S.C. §112 and is separate from the enablement requirement of that provision." However, in a later case we said, "The purpose of the [written] description requirement [of section 112, first paragraph] is to state what is needed to fulfill the enablement criteria. These requirements may be viewed separately, but they are intertwined." *Kennecott Corp. v. Kyocera Int'l, Inc.*, 835 F.2d 1419, 1421, 5 USPQ2d 1194, 1197 (Fed. Cir. 1987), *cert. denied*, 486 U.S. 1008 (1988). "The written description must communicate that which is needed to enable the skilled artisan to make and use the claimed invention." *Id.*

[2] To the extent that *Kennecott* conflicts with *Wilder*, we note that decisions of a three-judge panel of this court cannot overturn prior precedential decisions. *See UMC Elec. Co. v. United States*, 816

F.2d 647, 652 n.6, 2 USPQ2d 1465, 1468 n.7 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1025 (1988). This court in *Wilder* (and the CCPA before it) clearly recognized, and we hereby reaffirm, that 35 USC 112, first paragraph, requires a "written description of the invention" which is separate and distinct from the enablement requirement. The purpose of the "written description" requirement is broader than to merely explain how to "make and use"; the applicant must also convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the "written description" inquiry, *whatever is now claimed*.

The District Court's Analysis

We agree with the district court's conclusion that drawings alone *may* be sufficient to provide the "written description of the invention" required by §112, first paragraph. Several earlier cases, not specifically framing the issue in terms of compliance with the "written description" requirement, support this conclusion.

For example, we previously stated that "[t]here is no statutory prohibition against an applicant's reliance, in claiming priority under 35 U.S.C. §120, on a disclosure in a design application if the statutory conditions are met." *KangaROOS U.S.A., Inc. v. Caldor, Inc.*, 778 F.2d 1571, 1574, 228 USPQ 32, 33 (Fed. Cir. 1985). The question whether the applicant's claim to a pocket for athletic shoes was in fact entitled to the filing date of his earlier design application was not resolved in *KangaROOS*, however. Issues of intent to deceive the PTO were involved, as well as an error of law by the district court in construing the claims of the wrong application. *Id.* at 1574-75, 228 USPQ at 34-35. The district court's grant of partial summary judgment of inequitable conduct was vacated and the case remanded for trial.

In re Berkman, 642 F.2d 427, 209 USPQ 45 (CCPA 1981) involved a claim under 35 USC 120 to benefit of the filing date of two earlier design patent applications that included drawings of a carrying and storage case for tape cartridges and cassettes. The invention claimed in the later-filed utility application was an "insert" of "compartmented form," adapted for use in the interior of the storage case. *Id.* at 429, 209 USPQ at 47. The court characterized the dispositive issue as "whether the design applications sufficiently disclose the invention now claimed in the ... utility application at bar." *Id.* at 429, 209 USPQ at 46. While specifically recognizing that "drawings may be used to satisfy the disclosure requirement," *id.* at 429, 209 USPQ at 46-47, the court held that Berkman's design applications "fail[ed] to disclose the claimed invention sufficiently to comply with the requirements of §112 first paragraph." As the court explained:

Nowhere in the design applications is the word "insert" used, nor is there any indication that the interiors of the cases are inserts. The drawings do not disclose how the insert can be used to accommodate either cassette or cartridge type tape enclosures. Berkman argues that one skilled in the art would readily recognize that the interiors of the cases illustrated in the design drawings are inserts. We do not agree. There is nothing shown in the drawings to lead one of ordinary skill to such a conclusion.

Id. at 430, 209 USPQ at 47.

The issue in *In re Wolfensperger*, 302 F.2d 950, 133 USPQ 537 (CCPA 1962) was whether the specification of the applicant's utility patent application disclosing a ball valve, and particularly the drawings thereof, supported a claim limitation that read: "having, in untensioned condition, a mean diameter corresponding approximately to the mean diameter of said chamber and a radial width smaller than the radial width of said chamber...." *Id.* at 952, 133 USPQ at 538. The court did not agree with the Board's conclusion that the "radial width" relationship was not supported by applicant's figure 5:

The board's statement that "drawings alone cannot form the basis of a valid claim" is too broad a generalization to be valid and is, furthermore, contrary to well

settled and long-established Patent Office practice.... Consider, for one thing, that the sole disclosure in a design patent application is by means of a drawing. ... For another thing, consider that the only informative and significant disclosure in many electrical and chemical patents is by means of circuit

diagrams or graphic formulae, constituting "drawings" in the case....

... The practical, legitimate enquiry in each case of this kind is what the drawing in fact discloses to one skilled in the art. ...

... The issue here is whether there is supporting "disclosure" and it does not seem, under established procedure of long standing, approved by this court, to be of any legal significance whether the disclosure is found in the specification or in the drawings so long as it is there.

Id. at 955-56, 133 USPQ at 541-42.

Employing a "new matter" analysis, the court in *In re Heinle*, 342 F.2d 1001, 145 USPQ 131 (CCPA 1965) reversed a PTO rejection of the applicant's claims to a "toilet paper core" as "including subject matter having no clear basis in the application as filed." *Id.* at 1003, 145 USPQ at 133. The claim limitation said to be without support required that the width of the apertures in the core be "approximately one-fourth of the circumference of said core." *Id.* at 1007, 145 USPQ at 136. Having reviewed the application drawings relied upon for support, the court stated:

it seems to us that [the drawings] conform to the one-fourth circumference limitation almost exactly. But the claim requires only an approximation. Since we believe an amendment to the specification to state that one-fourth of the circumference is the aperture width would not violate the rule against "new matter," we feel that supporting disclosure exists. The rejection is therefore in error.

Id.

[3] These cases support our holding that, under proper circumstances, drawings alone may provide a "written description" of an invention as required by §112. Whether the drawings are those of a design application or a utility application is not determinative, although in most cases the latter are much more detailed. In the instant case, however, the design drawings are substantially identical to the utility application drawings.

Although we join with the district court in concluding that drawings may suffice to satisfy the "written description" requirement of §112, we can not agree with the legal standard that the court imposed for "written description" compliance, nor with the court's conclusion that no genuine issues of material fact were in dispute.

With respect to the former, the district court stated that although the '081 design drawings in question "allowed practice" [i.e., enabled], they did not necessarily

show what the invention is, when "the invention" could be a subset or a superset of the features shown. Is the invention the semi-circular lumens? The conical tip? The ratio at which the tip tapers? The shape, size, and placement of the inlets and outlets? You can measure all of these things from the diagrams in serial '081 and so can practice the device, but you cannot tell, because serial '081 does not say, what combination of these things is "the invention", and what range of variation is allowed without exceeding the scope of the claims. To show one example of an invention, even a working model, is not to describe what is novel or important.

745 F.Supp. at 522, 17 USPQ2d at 1356.

[4] We find the district court's concern with "what the invention is" misplaced, and its requirement that the '081 drawings "describe what is novel or important" legal error. There is "no legally recognizable or protected 'essential' element, 'gist' or 'heart' of the invention in a combination patent." *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 345 [128 USPQ 354] (1961).

"The invention" is defined by the claims on appeal. The instant claims do not recite *only* a pair of semi-circular lumens, or a conical tip, or a ratio at which the tip tapers, or the shape, size, and placement of the inlets and outlets; they claim *a double lumen catheter* having a *combination* of those features. That combination invention *is* what the '081 drawings show. As the district court itself recognized, "what Mahurkar eventually patented is exactly what the pictures in serial '081 show." 745 F.Supp. at 523, 17 USPQ2d at 1357.

We find the "range of variation" question, much emphasized by the parties, more troublesome. The district court stated that "although Mahurkar's patents use the same diagrams, [the claims] contain limitations that did not follow ineluctably [i.e., inevitably] from the diagrams." *Id.* at 524, 17 USPQ2d at 1357. As an example, the court stated (presumably with respect to independent claims 1 and 7 of the '329 patent) that

the utility patents claim a return lumen that is "substantially greater than one-half but substantially less than a full diameter" after it makes the transition from semi-circular to circular cross-section, and the

drawings of serial '081 fall in this range. But until the utility application was filed, nothing established that they had to - for that matter that the utility patent would claim anything other than the *precise* ratio in the diagrams....

Id. at 523, 17 USPQ2d at 1357. Mahurkar argues that one of ordinary skill in this art, looking at the '081 drawings, would be able to derive the claimed range.

The declaration of Dr. Stephen Ash, submitted by Mahurkar, is directed to these concerns. Dr. Ash, a physician specializing in nephrology (the study of the kidney and its diseases) and chairman of a corporation that develops and manufactures biomedical devices including catheters, explains why one of skill in the art of catheter design and manufacture, studying the drawings of the '081 application in early 1982, would have understood from them that the return lumen must have a diameter within the range recited by independent claims 1 and 7 of the '329 patent. Dr. Ash explains in detail that a return (longer) lumen of diameter less than half that of the two lumens combined would produce too great a pressure increase, while a return lumen of diameter equal or larger than that of the two lumens combined would result in too great a pressure drop. 7 "Ordinary experience with the flow of blood in catheters would lead directly away from any such arrangement," Ash states.

Although the district court found this reasoning "logical," it noted that later patents issued to Mahurkar disclose diameter ratios closer to 1.0 (U.S. Patent No. 4,584,968) and exactly 0.5 (U.S. Des. Patent No. 272,651). If these other ratios were desirable, the district court queried, "how does serial '081 necessarily exclude the[m]?" 745 F.Supp. at 523, 17 USPQ2d at 1357.

[5] The district court erred in taking Mahurkar's other patents into account. Mahurkar's *later* patenting of inventions involving different range limitations is irrelevant to the issue at hand. Application sufficiency under §112, first paragraph, must be judged as of the filing date. *United States Steel Corp. v. Phillips Petroleum Co.*, 865 F.2d 1247, 1251, 9 USPQ2d 1461, 1464 (Fed. Cir. 1989).

[6] The court further erred in applying a legal standard that essentially required the drawings of the '081 design application to *necessarily exclude* all diameters other than those within the claimed range. We question whether any drawing could ever do so. At least with respect to independent claims 1 and 7 of the '329 patent and claims depending therefrom, the proper test is whether the drawings conveyed with reasonable clarity to those of ordinary skill that Mahurkar had in fact invented the catheter recited in those claims, having (among several other limitations) a return lumen diameter substantially less than 1.0 but substantially greater than 0.5 times the diameter of the combined lumens. Consideration of what the drawings conveyed to persons of ordinary skill is essential. *See Ralston Purina*, 772 F.2d at 1575, 227 USPQ at 179 (ranges found in applicant's claims need not correspond *exactly* to those disclosed in parent application; issue is whether one skilled in the art could derive the claimed ranges from parent's disclosure).

Mahurkar submitted the declaration of Dr. Ash on this point; Vas-Cath submitted no technical evidence to refute Ash's conclusions. Although the district court considered Dr. Ash's declaration, we believe its import was improperly disregarded when viewed through the court's erroneous interpretation of the law. 8 We hold that the Ash declaration and Vas-Cath's non-refutation thereof, without more, gave rise to a genuine issue of material fact inappropriate for summary disposition. *See Hesston Corp. v. Sloop*, 1988 U.S. Dist. LEXIS 1573, *13 (D. Kansas) (summary judgment on §112 "written description" issue inappropriate where resolution of what parent disclosure conveyed to those skilled in the art may require examination of experts, demonstrations and exhibits).

Mahurkar urges that at least some of the remaining claims do not contain the range limitations discussed by the district court, and that the presence of range limitations was not a proper basis for invalidating those remaining claims. For example, claim 8 of the '141 patent requires, *inter alia*, a smooth conical tapered tip and "the portion of said tube between said second opening and said

conical tapered tip *being larger than* said first lumen in the transverse direction normal to the plane of said septum." Vas-Vath counters that claim 8 of the '141 patent is just as much a "range" claim as claims 1 and 7 of the '329 patent, albeit one having only a lower limit and no upper limit.

Absent any separate discussion of these remaining claims in the district court's opinion, we assume that the court applied to them the same erroneous legal standard. Summary judgment was therefore inappropriate as to the remaining claims. Additionally, the possibility that the '081 drawings may provide an adequate §112 "written description" of the subject matter of some of the claims but not others should have been considered. *See, e.g., In re Borkowski*, 422 F.2d 904, 909 n.4, 164 USPQ 642, 646 n.4 (CCPA 1970) (on review of §112 non-enablement rejection: "A disclosure may, of course, be insufficient to support one claim but sufficient to support another.") On remand, the district court should *separately* analyze whether the "written description" requirement has been met as to the subject matter of *each* claim of the '141 and '329 patents.

CONCLUSION

The district court's grant of summary judgment, holding all claims of the '329 and '141 patents invalid under 35 USC 102(b), is hereby reversed as to all claims, and the case remanded for further proceedings consistent herewith.

COSTS

Each party to bear its own costs.

REVERSED and REMANDED

APPENDIX

Independent Claims of the '329 Patent :

1. A double lumen catheter having an elongated tube with a proximal first cylindrical portion enclosing first and second lumens separated by an internal divider, the proximal end of said elongated tube connecting to two separate connecting tubes communicating with the respective first and second lumens for the injection and removal of fluid, the first lumen extending from the proximal end of said elongated tube to a first opening at the distal end of said elongated tube, and the second lumen extending from the proximal end of said elongated tube to a second opening at approximately the distal end of said first cylindrical portion, wherein the improvement comprises: said elongated tube having at its distal end a smooth conical tapered tip that smoothly merges with a second cylindrical portion of said elongated tube, and said second cylindrical portion enclosing the first lumen from the conical tapered tip to approximately the location of said second opening, wherein said second cylindrical portion has a diameter substantially greater than one-half but substantially less than a full diameter of said first cylindrical portion.

7. A double lumen catheter having an elongated tube with a proximal first cylindrical portion enclosing first and second lumens separated by an internal divider, the proximal end of said elongated tube connecting to two separate connecting tubes communicating with the respective first and second lumens for the injection and removal of fluid, the first lumen extending from the proximal end of said elongated tube to a first opening at the distal end of said elongated tube, and the second lumen extending from the proximal end of said elongated tube to a second opening at approximately the distal end of said first cylindrical portion, wherein the improvement comprises: said elongated tube having at its distal end a smooth conical tapered tip that smoothly merges with a second cylindrical portion of said elongated tube, and said second cylindrical portion enclosing the first lumen from the conical tapered tip to approximately the location of said second opening, said second cylindrical portion having a diameter substantially greater than one-half but substantially less than a full diameter of said first cylindrical portion, said divider in said first cylindrical portion being planar, the lumens being "D" shaped in cross-section in said first cylindrical portion, the elongated tube being provided with a plurality of holes in the region of the conical tapered tip, and said first cylindrical portion of the elongated tube smoothly merging with said second cylindrical portion of the elongated tube.

Independent Claims of the '141 Patent :

1. A double lumen catheter having an elongated tube with a proximal first cylindri

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cal portion enclosing first and second lumens separated by an internal divider, the proximal end of said elongated tube connecting to two separate connecting tubes communicating with the respective first and second lumens for the injection and removal of fluid, the first lumen extending from the proximal end of said elongated tube to a first opening at the distal end of said elongated tube, and the second lumen extending from the proximal end of said elongated tube to a second opening at approximately the distal end of said first cylindrical portion, wherein the improvement comprises: said elongated tube having at its distal end a smooth conical tapered tip that smoothly merges with a second cylindrical portion of said elongated tube, and said second cylindrical portion enclosing the first lumen from the conical tapered tip to approximately the location of said second opening, wherein said second cylindrical [sic] portion has a diameter substantially less than a full diameter of said first cylindrical portion but larger than said first lumen in the transverse direction normal to the plane of said flat divider.

7. A double lumen catheter comprising an elongated cylindrical tube enclosing first and second lumens separated by a flat longitudinal internal divider formed as an integral part of said tube, said tube and said divider forming said first and second lumens as semi-cylindrical cavities within said tube, the proximal end of said elongated tube connecting to two separate connecting tubes communicating with the respective first and second lumens for the injection and removal of fluid, the first lumen extending from the proximal end of said elongated tube to a first opening at the distal end of said elongated tube, said distal end of said tube forming a smooth conical tapered tip and the second lumen extending from the proximal end of said elongated tube to a second opening spaced a substantial distance away from said first opening toward the proximal end of said tube, the distal end of said divider being joined to the outside wall of said tube distal of said second opening, and the outside wall of said tube forming a smooth transition between said conical tapered tip and the outer circumference of the tube proximal of said second opening, said transition being larger than said first lumen in the transverse direction normal to the plane of said flat divider.

8. A double lumen catheter comprising an elongated cylindrical tube having a longitudinal planar septum of one-piece construction with said tube, said septum dividing the interior of said tube into first and second lumens, said lumens being D-shaped in cross-section, the proximal end of said tube connecting to two separate tubes communicating with the respective first and second lumens for the injection and removal of fluids, the lumen extending from the proximal end of said tube to a first opening at the distal end of said tube, and the second lumen extending from the proximal end of said tube to a second opening axially spaced from the distal end of said tube, said tube having at its distal end a smooth conical tapered tip that merges with the cylindrical surface of said tube, said first lumen, including the internal wall thereof formed by said septum extending continuously through said conical tapered tip, and the portion of said tube between said second opening and said conical tapered tip being larger than said first lumen in the transverse direction normal to the plane of said septum.

13. A double lumen catheter comprising an elongated cylindrical tube enclosing first and second lumens separated by a flat longitudinal internal divider formed as an integral part of said tube, said tube and said divider forming said first and second lumens as semi-cylindrical cavities within said tube, the proximal end of said elongated tube connecting to two separate connecting tubes communicating with the [sic] respective first and second lumens for the injection and removal of fluid, the first lumen extending from the proximal end of said elongated tube to a first opening at the distal end of said elongated tube, said distal end of said tube forming a smooth conical tapered tip defining the distal portion of said first lumen and said first opening, said first opening and an adjacent portion of said first lumen having a circular transverse cross-sectional configuration, and the second lumen extending from the proximal end of said elongated tube to a second opening spaced a substantial distance away from said first opening toward the proximal end of said tube, the inside walls of said tube forming a smooth transition between said semicylindrical and circular transverse cross-sectional configurations of said first lumen, the outside dimension of said transition being

larger than said first lumen in the transverse direction normal to the plane of said flat divider.

Footnotes

Footnote 1. The district court directed entry of final judgment as to the issue of patent invalidity pursuant to Fed.R.Civ.P. 54(b).

Footnote 2. The utility patent drawings contain additional but minor shading and lead lines and reference numerals not present in the design application drawings.

Footnote 3. Vas-Cath's apprehension of suit apparently arose from a 1988 Canadian action instituted by Mahurkar for infringement of Canadian '089.

Footnote 4. Section 120, titled "Benefit of Earlier Filing Date in the United States," provides (emphasis ours):

An application for patent for an invention *disclosed in the manner provided by the first paragraph of section 112 of this title* in an application previously filed in the United States, or as provided by section 363 of this title, which is filed by an inventor or inventors named in the previously filed application shall have the same effect as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application.

Footnote 5. For additional background, see Rollins, "35 USC 120 - The Description Requirement," 64 *J. Pat. Off. Soc'y* 656 (1982); Walterscheid, "Insufficient Disclosure Rejections (Part III)," 62 *J. Pat. Off. Soc'y* 261 (1980).

Footnote 6. See, *Chester v. Miller*, 906 F.2d 1574, 15 USPQ2d 1333 (Fed. Cir. 1990) (parent application's disclosure of chemical species constituted 102(b) prior art against continuation-in-part (c-i-p) application on appeal, but did not provide sufficient written description to support c-i-p's claims to encompassing genus); *In re Gostelli*, 872 F.2d 1008, 10 USPQ2d 1614 (Fed. Cir. 1989) (foreign priority application's disclosure of chemical subgenus was insufficient written description to support genus claims of corresponding U.S. application); *In re Wright*, 866 F.2d 422, 9 USPQ2d 1649 (Fed. Cir. 1989) (application in "clear compliance" with §112 "written description" requirement with respect to claim limitation that microcapsules were "not permanently fixed"); *Utter v. Hiraga*, 845 F.2d 993, 998, 6 USPQ2d 1709, 1714 (Fed. Cir. 1988) (holding generic interference count to scroll compressor supported by written description of foreign priority application, the court stated, "A specification may, within the meaning of 35 U.S.C. §112 ¶1, contain a written description of a broadly claimed invention without describing all species that claim encompasses"); *Kennecott Corp. v. Kyocera Int'l, Inc.*, 835 F.2d 1419, 5 USPQ2d 1194 a (Fed. Cir. 1987) (parent application's lack of express disclosure of inherent "equiaxed microstructure" property did not deprive c-i-p's claims to a sintered ceramic body having said property of the benefit of parent's filing date), *cert. denied*, 486 U.S. 1008 (1988); *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 227 USPQ 177 (Fed. Cir. 1985) (parent application's disclosure provided adequate written description support for certain claim limitations respecting protein content, temperature, and moisture content, but not others); *In re Wilder*, 736 F.2d 1516, 222 USPQ 369 (Fed. Cir. 1984) (broadly worded title, general description of drawing, and objects of invention of parent patent application did not adequately support reissue application claims directed to genus of indicating mechanisms for dictating machines), *cert. denied*, 469 U.S. 1209 (1985); *In re Kaslow*, 707 F.2d 1366, 217 USPQ 1089 (Fed. Cir. 1983) (claims to method of redeeming merchandise coupons, comprising step of providing an audit of coupon traffic, were not supported by specification of parent application).

Footnote 7. Higher pressure drops are associated with smaller cross-sectional areas for fluid flow. Mahurkar's opening brief to this court states that by applying well-known principles of fluid mechanics (i.e., the work of Poiseuille and Hagen), it can be calculated that the diameter of the circular (return) lumen would have to be in the range of 0.66 times the diameter of the two lumens combined in order to achieve proper blood flow at equal pressure drop. The 0.66 ratio falls within

the noted claim limitation.

Footnote 8. The following colloquy at oral argument before the district court supports our view:

Counsel for Mahurkar : "So the only evidence that we have on this subject from people of ordinary skill in the art is that the drawings do communicate these range limitations, and given the procedural posture of this case, the Court has to accept that evidence...."

District Court: * * * "And if you could have written a large number of things that were different from what was actually filed in 1984, then the diagram isn't enough.

And that seems to me something that can't be resolved by ogling the Ash declaration. It's really a pure question of law."

- End of Case -

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ISSN 1526-8535

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In re Wertheim, et al.

(CCPA)
191 USPQ 90

Decided Aug. 26, 1976

No. 75-536

U.S. Court of Customs and Patent Appeals

Headnotes

PATENTS

1. Applications for patent — Continuing (§ 15.3)

Patentability — Anticipation — Carrying date back of references (§ 51.203)

Patentability — Anticipation — Patents — In general (§ 51.2211)

Specification — Sufficiency of disclosure (§ 62.7)

Claims are entitled to filing dates of parent application under 35 U.S.C. 120 and foreign application that was filed less than one year before parent application under 35 U.S.C. 119 if parent and foreign applications comply with 35 U.S.C. 112, first paragraph, including description requirement, as to claims' subject matter.

2. Foreign patents (§ 38.)

Patentability — Anticipation — Carrying date back of references (§ 51.203)

Specification — Sufficiency of disclosure (§ 62.7)

All 35 U.S.C. 119 requires is that foreign application describe and seek protection for broadly same invention as described in U.S. application claiming its benefit.

3. Court of Customs and Patent Appeals — Issues determined — In general (§ 28.201)

Court of Customs and Patent Appeals — Issues determined — Ex parte patent cases
(§ 28.203)

Court of Customs and Patent Appeals, in interests of judicial economy, declines entreaty to

determine whether decision's broad rule is still valid, since stated issue is dispositive regardless of decision's validity in its own factual setting; court need not separately decide sufficiency of parent U.S. application of applicants who must have benefit of their foreign application, which contains disclosure regarding limitations that is virtually identical to parent application's, to antedate reference patent.

4. Specification — Sufficiency of disclosure — (§ 62.7)

Description requirement's function is to ensure that inventor possessed, as of filing date of application relied on, specific subject matter later claimed by him, but how specification accomplishes this is not material; application need not describe claim limitations exactly, but only so clearly that persons of ordinary skill in art will recognize from disclosure that applicants invented processes including those limitations.

5. Amendments to patent application — In general — (§ 13.1)

Specification — Sufficiency of disclosure — (§ 62.7)

Primary consideration, in determining whether application describes claim limitations sufficiently clearly that persons of ordinary skill in art will recognize from disclosure that applicants invented processes including those limitations, is factual and depends on invention's nature and amount of knowledge imparted to those skilled in art by disclosure; broadly articulated rules are particularly inappropriate in this area; mere comparison of ranges is not enough, nor are mechanical rules substitute for analysis of each case on its facts to determine whether application conveys to those skilled in art information that applicants invented claims' subject matter; court must decide whether invention applicants seek to protect by their claims is part of invention they described as theirs in specification; fact that what applicants claim as patentable to them is less than what they describe as their invention is not conclusive if their specification also reasonably describes what they do claim; form would otherwise triumph over substance, substantially eliminating applicant's right to retreat to otherwise patentable species merely because he erroneously thought he was first with genus when he filed; patent law provides for amending claims as well as specification during prosecution, so that 35 U.S.C. 112, second paragraph, "particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention" does not prohibit applicant from changing what he regards as invention, or subject matter on which he seeks patent protection, during application's pendency.

6. Patentability — Anticipation — Carrying date back of references — (§ 51.203)

Pleading and practice in Patent Office — Rejections — (§ 54.7)

Specification — Sufficiency of disclosure — (§ 62.7)

As in cases involving section 112 enablement requirement, Patent and Trademark Office has initial burden of presenting evidence or reasons why persons skilled in art would not recognize in disclosure description of invention defined by claims; pointing to fact that claim reads on embodiments outside description's scope satisfies burden, so that applicants whose claim recites solids content range of "at least 35%" and whose foreign application described 25-60% range have burden of showing that 60% upper limit of solids content described is inherent in claim's limitation "at least 35%"; it is immaterial in ex parte prosecution whether same or similar claims were allowed to others.

7. Interference — Interference in fact (§ 41.40)**Specification — Claims as disclosure (§ 62.3)****Specification — Sufficiency of disclosure (§ 62.7)**

Originally filed claim in appealed application is its own written description; disclosure of patent issued after applicants' foreign application is not evidence of what those skilled in art considered conventional at time foreign application was filed for Section 112 purposes; fact that claim's limitation is not material does not matter when limitation is copied; immateriality excuses only failure to copy patent claim's limitation.

8. Specification — Sufficiency of disclosure (§ 62.7)

There is important practical distinction between broad generic chemical compound inventions in which each compound within genus is separate embodiment of invention, and invention in which range of solids content is but one of several process parameters; broader range does not describe narrower range where broad described range pertains to different invention than narrower and subsumed claimed range.

9. Patentability — Anticipation — Carrying date back of reference (§ 51.203)**Pleading and practice in Patent Office — Rejections (§ 54.7)****Specification — Sufficiency of disclosure (§ 62.7)**

Fact that applicants' foreign application describes invention as employing solids contents within 25-60% range along with specific embodiments of 36% and 50% warrants conclusion, in context of process for making freeze-dried instant coffee from concentrated coffee, that persons skilled in art would consider claimed process employing 35-60% solids content range to be part of invention; Patent and Trademark Office's mere argument of lack of literal support is not enough; In re Lukach, 169 USPQ 795, statement that invention claimed does not have to be described in *ipsis verbis* in order to satisfy 35 U.S.C. 112 description requirement would be empty verbiage if lack of literal support alone were enough to support 35 U.S.C. 112 rejection; burden of showing that claimed invention is not described in specification rests on Patent and Trademark Office in first instance, and it is up to it to give reasons why description not in *ipsis verbis* is insufficient.

10. Amendments to patent application — New matter (§ 13.5)**Pleading and practice in Patent Office — Rejections (§ 54.7)****Specification — Sufficiency of disclosure (§ 62.7)**

New matter rejection resting on Patent and Trademark Office's conclusion that application as filed did not describe limitation is tantamount to rejection on 35 U.S.C. 112, first paragraph, description requirement.

11. Patentability — Anticipation — In general — (§ 51.201)**Patentability — Invention — In general — (§ 51.501)****Pleading and practice in Patent Office — Rejections — (§ 54.7)**

Disclosure in prior art of any value within claimed range is anticipation of claimed range; fact that rejections are under 35 U.S.C. 103 rather than 102 requires considering whether applicants' invention and patent's disclosure are directed to different purposes and whether persons of ordinary skill in art would not look to reference patent's grandparent application for solution to problem addressed by applicants.

12. Patentability — Invention — In general — (§ 51.501)

Applicants may not use rationale, that patent and its grandparent application gave no hint of inventive concept of regulating product bulk density to show unobviousness without antecedent basis for it in their application.

13. Patentability — Invention — Specific cases — In general — (§ 51.5091)

It would be obvious to reduce size of coffee foam particles by suitable mechanical means to desired end product size, in process for making freeze-dried instant coffee, before, rather than after drying.

14. Patentability — Invention — In general — (§ 51.501)

Applicants whose claim requires freezing over 7 to 25 minute period and who indicate that this produces coffee "having pleasant dark colour" have not overcome prima facie case of obviousness made out by reference disclosing instantaneous freezing, absent showing that only their claimed freezing time produces coffee of pleasant dark color.

15. Patentability — Invention — In general — (§ 51.501)**Pleading and practice in Patent Office — Rejections — (§ 54.7)****Specification — Sufficiency of disclosure — (§ 62.7)**

Fact that persons skilled in art may not know how to ensure claimed final product densities from specification is pertinent only to rejection on 35 U.S.C. 112, first paragraph, enablement requirement, and not to whether limitation distinguishes prior art under Section 103.

16. Patentability — Anticipation — Patent application — (§ 51.219)**Specification — In general — (§ 62.1)**

Applicants' disclosure may not be used against them as prior art absent admission that matter disclosed in specification is in prior art.

17. Claims — Article defined by process of manufacture (§ 20.15)**Patentability — Invention — In general (§ 51.501)**

Court of Customs and Patent Appeals does not subscribe to broad proposition that process limitations can never serve to distinguish apparatus claims' subject matter from prior art.

18. Patentability — Anticipation — Patents — In general

Prior art patents are to be viewed for what they disclose in their entireties and not merely for their inventive contributions to art.

19. Claims — Article defined by process of manufacture (§ 20.15)**Patentability — Invention — In general (§ 51.501)****Pleading and practice in Patent Office — Rejections (§ 54.7)**

Patentability of products defined by product-by-process claims, and not processes for making them, is what must be gauged in light of prior art; fact that some products covered by applicants' product-by-process claims may not be suggested by reference patent's grandparent application that completely discloses other subject matter embraced by applicants' claims is not relevant to patentability, complete disclosure in prior art being epitome of obviousness; fact that applicants do not contend that they could not understand basis for rejection because of Patent and Trademark Office's failure to give clear reasons for its action under 35 U.S.C. 132 and explanations given by examiner and Board of Appeals were legally ample under section warrants conclusion that claims that were allegedly improperly grouped with other claims were subject of proper rejection.

Particular patents — Drying Method

Wertheim and Mishkin, Drying Method, rejection of claims 1, 4, 6-16, 21-28, 30-35, and 40-43 affirmed; rejection of claims 2, 17-20, 29, 37, and 38 reversed; appeal dismissed as to claims 3, 5, 36, and 39.

Case History and Disposition:

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Appeal from Patent and Trademark Office Board of Appeals.

Application for patent of John H. Wertheim and Abraham R. Mishkin, Serial No. 96,285, filed Dec. 8, 1970, continuation of application, Serial No. 537,679, filed Mar. 28, 1966, claiming benefit of Swiss application filed Apr. 2, 1965. From decision rejecting claims 1, 2, 4, 6-35, 37, 38, and 40-43, applicants appeal. Modified; Baldwin and Miller, Judges, dissenting in part with opinions.

Attorneys:

William H. Vogt III, and Watson Leavenworth Kelton & Taggart, both of New York, N.Y. (Paul E. O'Donnell, Jr., New York, N.Y., of counsel) for appellants.

Joseph F. Nakamura (Gerald H. Bjorge, of counsel) for Commissioner of Patents and Trademarks.

Judge:

Before Markey, Chief Judge, and Rich, Baldwin, Lane, and Miller, Associate

Opinion Text

Opinion By:

Rich, Judge.

This appeal is from the decision of the Patent and Trademark Office (PTO) Board of Appeals affirming the final rejection of claims 1-43, all the claims in application serial No. 96,285, filed December 8, 1970, entitled "Drying Method." ¹The appeal on claims 3, 5, 36, and 39 has been withdrawn, and as to these claims it is, therefore, dismissed. As to the remaining claims, we affirm in part and reverse in part.

The Invention

Appellants' invention centers around a process for making freeze-dried instant coffee. Claims 1, 6, 30, and 40 are illustrative:

1. An improved process for minimising loss of volatiles during freeze-drying of coffee extract which comprises obtaining coffee extract, concentrating said extract to a higher solids level of at least 35%, foaming said concentrated extract to a substantial overrun by injection of a gas into said extract at at least atmospheric pressure to thereby avoid evaporative cooling due to evaporation of water in said extract during said foaming, freezing said foam to below its eutectic point at at least atmospheric pressure while avoiding evaporative cooling, and freeze-drying said extract at below the eutectic temperature of said extract.

6. Process for preparing a powdered coffee extract, which comprises adding sufficient inert gas to a concentrated aqueous extract of roast coffee containing about 25% to 60% by weight of soluble coffee solids to provide a foam having a density between about 0.4 and 0.8 gm/cc, freezing the foamed extract to a solid mass, grinding the frozen foam to a particle size of at least 0.25 mm and freeze drying the ground frozen foam.

30. An apparatus for carrying out the process defined in claim 6 comprising, in combination, means for foaming, a closed chamber capable of being maintained at a temperature which is substantially below the melting temperature of said frozen foam, and, disposed within said chamber, a movable endless belt, means for moving said belt at a low speed, a spreading device for distributing coffee extract foam on said belt and refrigerating means for cooling at least one surface of said belt with a liquid refrigerant.

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40. A dry coffee powder comprising a freeze-dried particulated foamed extract of roast and ground coffee, the foam before freeze drying having a density between about 0.4 and 0.8 gm/cc.

The remaining claims are reproduced in the Appendix hereto. Appellants assert that their invention produces an instant coffee having a bulk density of 0.2-0.3 gm/cc, which corresponds to that of conventional spray-dried instant coffee. ²They allege they discovered that this desired bulk density

results from controlling the solids content of the concentrated extract prior to foaming and the density of the foam generated therefrom within the range of their freeze-drying process claims.

Since the claims are somewhat elliptical in setting out the steps of appellants' process, we shall describe it further. An aqueous extract of coffee is prepared by percolating hot water through roasted and ground coffee beans. The extract is concentrated to have a solids content between 25% and 60% and is then charged with gas to produce a foam having a density between 0.4 and 0.8 gm/cc. The foam is frozen and ground into particles, preferably 0.25 to 2.0 mm in size, which are freeze-dried by conventional techniques.

Prosecution History and Rejections

The claims which remain on appeal fall into two broad groups: The "interference" claims, 1, 2, 4, 37, and 38; and the "non-interference" claims, 6-35 and 40-43.

As originally filed, the application contained claims 1-5 copied from Pfluger et al. U. S. Patent No. 3,482,990 (Pfluger patent), issued December 9, 1969, on an application filed February 10, 1969. A letter under Rule 205(a), 37 CFR 1.205(a), requesting an interference with the Pfluger patent accompanied the application. By amendment, appellants transferred claims 6-35 from their 1966 application to the instant application. Claims 36-39, added by amendment, are modified versions of the previously copied claims and were presented for the purpose of providing a basis for phantom counts in an interference with the Pfluger patent under Rule 205(a) and Manual of Patent Examining Procedure § 1101.02. They depend from claim 2.

The patents relied on by the examiner are:

Table set at this point is not available. See table in hard copy or call BNA PLUS at 1-800-452-7773 or 202-452-4323.

The Pfluger patent issued on a chain of four applications: serial No. 800,353, filed Feb. 10, 1969, which was a continuation of serial No. 520,347, filed Jan. 13, 1966 (Pfluger 1966), which was a continuation in-part of serial No. 309,410, filed Sept. 17, 1963 (Pfluger 1963), which was a continuation-in-part of serial No. 98,007, filed Mar. 24, 1961. The Pfluger patent discloses a process for making freeze-dried instant coffee which has as its goal minimizing the loss from a foamed extract of volatile aromatics which contribute substantially to the natural flavor of coffee and other foods.

De George describes apparatus and methods for freezing liquid, unfoamed coffee extract prior to drying on continuous belts refrigerated by brine tanks contacting the bottom surfaces of the belts. The claims of De George are directed to processes for facilitating the removal of the frozen sheet of coffee extract from the belt before it is freeze dried.

The British patent discloses a rapid freeze-drying process in which the food product is frozen, milled into small particles which are spread from a hopper in single-particle layers onto plates, and freeze-dried in a vacuum chamber. More details of the disclosure are supplied infra.

Carpenter discloses the cooling of a refrigeration belt by spraying cold brine onto the underside of the belt.

The examiner made multiple rejections which were addressed by the board in eight categories, seven of which are before us for review. Category I covers the "interference" claims, which were rejected on the Pfluger patent, claims 1, 2, and 4 under 35 USC 102 and claims 37 and 38 under § 103. The board agreed with the examiner's position that these claims were not entitled to the benefit of appellants' 1965 Swiss priority date because they were not supported by appellant's parent and Swiss applications. The limitations held to be unsupported were "at least 35% [solids content]" in claim 1, "between 35% and 60% soluble solids" in claims 2 and 4, and "pressure of less than 500 microns"

and "final product

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temperature of less than 110°F." in claim 4. For that reason appellants were held to be junior to the Pfluger patent on the basis of Pfluger's 1966 filing date. In light of appellants' refusal to file a Rule 204(c) ³affidavit showing a date of invention prior to Pfluger's 1966 filing date, the examiner and the board held the Pfluger patent to be prior art under § 102(e) against claims 1, 2, 4, 37, and 38 and rejected the claims on that basis. ⁴The board refused to hold that the claims were supported in the parent and Swiss applications, "for interference purposes," under our decision in *In re Waymouth*, 486 F.2d 1058, 179 USPQ 627 (CCPA 1973), mod. on reh., 489 F.2d 1297, 180 USPQ 453 (CCPA 1974). The board stated that appellants' failure to file a Rule 204(c) affidavit precluded any attempt to get into an interference and that *Waymouth*, which concerned the right to make a claim for interference purposes in the application on appeal, was therefore inapplicable to this case.

Under Category II, the board affirmed the rejection of claims 6-10, 12-15, 17, and 26 under 35 USC 132 for new matter. The board held that these claims, which were added to the instant application by amendment, were not supported in the original disclosure for lack of a description of the claimed size of the ground foam particles, i.e., "at least 0.25 mm."

The Category III rejection was reversed by the board.

In Category IV, claims 6-8, 11-20, and 40-43 were rejected under § 103 on the disclosure of Pfluger 1963 ⁵carried forward to the Pfluger patent, in accordance with *In re Lund*, supra. The board found that the foam density range of 0.4-0.8 gm/cc claimed by appellants (and the 0.6-0.8 gm/cc range in claims 19 and 20) was suggested by Pfluger 1963's disclosure of 0.1-0.5 gm/cc foam density and that Pfluger 1963 teaches the use of foaming gases and concentrating the coffee extract prior to foaming. The board found that the final product densities claimed would be inherent "in view of the same foam overrun density disclosed by Pfluger" and that Pfluger's example I, which discloses breaking the frozen foam strands into 3/4" lengths (i.e., "at least 0.25 mm") before drying, would suggest the size of the ground foam particles claimed by appellants.

Category V added De George to the § 103 rejection of claims 9, 10, 30, and 32-35. The board agreed with the examiner that the temperatures, foam thicknesses, and belt lengths and speeds covered by these claims are disclosed in De George, and that it would be obvious to use De George's moving belt apparatus in the Pfluger process.

In Category VI claims 21-23 and 26-29 were rejected under § 103 on Pfluger in view of the British patent, which was relied on for its teaching of the concentration of coffee extract by freezing to a solids content of 27 to 28%. Pfluger was applied to the claims under the rationale employed in Category IV.

Category VII was the rejection of claims 24 and 25 under § 103 on Pfluger, the British patent, and De George, which was relied on to show "the deposition of a coffee extract on a moving belt prior to grinding and freeze drying." The board otherwise relied on the reasoning in Categories V and VI.

Under Category VIII claim 31 was rejected on Pfluger and De George under § 103 for the reasons of Category V, with reliance on Carpenter to show refrigeration of the belt by spraying refrigerant onto the bottom of the belt instead of using De George's brine tanks.

Opinion

The "Interference" Claims — 1, 2, 4, 37, and 38

[1] The dispositive issue under this heading is whether appellants' parent and Swiss applications comply with 35 USC 112, first paragraph, including the description requirement, as to the subject

matter of

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these claims. If they do, these claims are entitled to the filing dates of the parent application under 35 USC 120, *In re Lukach*, 58 CCPA 1233, 442 F.2d 967, 169 USPQ 795 (1971), and the Swiss application under 35 USC 119, *Kawai v. Metlesics*, 480 F.2d 880, 887-88, 178 USPQ 158, 164 (CCPA 1973). Since the PTO relies only on Pfluger 1966 to provide the effective U.S. filing date of the patent as a reference against these claims under §§ 102(e) and 103, a right of foreign priority in appellants' Swiss application will antedate Pfluger 1966 and remove it as prior art against the claims.

[2] The only defect asserted below in appellant's parent and Swiss application disclosures that covers all these claims is that the applications do not contain written descriptions of the solids content limitations of the concentrated extract prior to foaming, i.e., "at least 35%" (claim 1) and "between 35% and 60%" (claims 2, 4, 37, and 38).⁶

[3] Appellants' parent and Swiss applications contain virtually identical disclosures on this point. Both disclose that the coffee extract initially produced by percolation of water through ground roasted coffee is concentrated prior to foaming by suitable means "until a concentration of 25 to 60% solid matter is reached." Examples in each disclose specific embodiments having solids contents of 36% and 50%.

In our view, it is necessary to decide only whether the Swiss application complies with the description requirement of § 112 with respect to the questioned limitations. There is no question that the *instant* application supports claims 1, 2, and 4, which are original claims in that application. Appellants and the solicitor urge us to decide this case by determining whether the broad rule of *In re Waymouth*, *supra*, is still valid or must be disapproved. In the interest of judicial economy, we decline this entreaty since the issue of whether the Swiss application contains written descriptions of the disputed limitations of claims 1, 2, 4, 37, and 38, being addressed to strict compliance with § 112, first paragraph, is dispositive regardless of the validity of *Waymouth* in its own factual setting. The sufficiency of the parent U. S. application need not be separately decided since appellants must have the benefit of their Swiss application date to antedate the Pfluger patent.

[4] The function of the description requirement is to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him; how the specification accomplishes this is not material. *In re Smith*, 481 F.2d 910, 178 USPQ 620 (CCPA 1973), and cases cited therein. It is not necessary that the application describe the claim limitations exactly, *In re Lukach*, *supra*, but only so clearly that persons of ordinary skill in the art will recognize from the disclosure that appellants invented processes including those limitations. *In re Smythe*, 480 F.2d 1376, 1382, 178 USPQ 279, 284 (CCPA 1973).

[5] The primary consideration is *factual* and depends on the nature of the invention and the amount of knowledge imparted to those skilled in the art by the disclosure. The factual nature of the inquiry was emphasized in *In re Ruschig*, 54 CCPA 1551, 1558-59, 379 F.2d 990, 995-96, 154 USPQ 118, 123 (1967), which involved the question whether a broad generic disclosure "described" the single chemical compound claimed:

But looking at the problem, as we must, from the standpoint of one with no foreknowledge of the specific compound, it is our considered opinion that the board was correct in saying:

Not having been specifically named or mentioned in any manner, one is left to selection from the myriads of possibilities encompassed by the broad disclosure, with no guide indicating or directing that this particular selection should be made rather than any of the many others which could also be made.

Appellants refer to 35 USC 112 as the presumed basis for this rejection and emphasize

language therein about *enabling* one skilled in the art to *make* the invention, arguing therefrom that one skilled in the art would be enabled by the specification to make chlorpropamide. We find the argument unpersuasive for two reasons. First, it presumes some motivation for

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wanting to make the compound in preference to others. While we have no doubt a person so motivated would be enabled by the specification to make it, this is beside the point for the question is not whether he would be so enabled but whether the specification discloses the compound to him, specifically, as something appellants actually invented. We think it does not. Second, we doubt that the rejection is truly based on section 112, at least on the parts relied on by appellants. If based on section 112, it is on the requirement thereof that "The specification shall contain a written description *of the invention* * * *." [Emphasis ours.] We have a specification which describes appellants' invention. The issue here is in no wise a question of its compliance with section 112, it is a question of *fact: Is the compound of claim 13 described therein?* Does the specification convey clearly to those skilled in the art, to whom it is addressed, in any way, the information that appellants invented that specific compound?

Broadly articulated rules are particularly inappropriate in this area. See, e.g., *In re Smith*, 59 CCPA 1025, 1033, 458 F.2d 1389, 1394, 173 USPQ 679, 683 (1972), in which this court felt obliged to overrule a supposed "rule" of *In re Risse*, 54 CCPA 1495, 1500-01, 378 F.2d 948, 952-53, 154 USPQ 1, 5 (1967). Mere comparison of ranges is not enough, nor are mechanical rules a substitute for an analysis of each case on its facts to determine whether an application conveys to those skilled in the art the information that the applicant invented the subject matter of the claims. In other words, we must decide whether the invention appellants seek to protect by their claims is part of the invention that appellants have described *as theirs* in the specification. That what appellants claim as patentable to them is *less* than what they describe as their invention is not conclusive if their specification also reasonably describes that which they do claim. Inventions are constantly made which turn out not to be patentable, and applicants frequently discover during the course of prosecution that only a part of what they invented and originally claimed is patentable. As we said in a different context in *In re Saunders*, 58 CCPA 1316, 1327, 444 F.2d 599, 607, 170 USPQ 213, 220 (1971):

To rule otherwise would let form triumph over substance, substantially eliminating the right of an applicant to retreat to an otherwise patentable species merely because he erroneously thought he was first with the genus when he filed. Cf. *In re Ruff*, 45 CCPA 1037, 1049, 256 F.2d 590, 597, 118 USPQ 340, 347 (1958). Since the patent law provides for the amendment during prosecution of *claims*, as well as the specification supporting claims, 35 USC 132, it is clear that the reference to "particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention" in the second paragraph of 35 USC 112 does not prohibit the applicant from changing what he "regards as his invention" (i.e., the subject matter on which he seeks patent protection) during the pendency of his application. Cf. *In re Brower*, 58 CCPA 724, [728] 433 F.2d 813, 817, 167 USPQ 684, 687 (1970) (fact that claims in continuation application were directed to subject matter which appellants had not regarded as part of their invention when the parent application was filed held not to prevent the continuation application from receiving benefit of parent's date).

[6] Claims 1 and 4 present little difficulty. Claim 1 recites a solids content range of "at least 35%," which reads literally on embodiments employing solids contents outside the 25-60% range described in the Swiss application. As in cases involving the enablement requirement of § 112, e.g., *In re Armbruster*, 512 F.2d 676, 185 USPQ 152 (CCPA 1975), we are of the opinion that the PTO has the initial burden of presenting evidence or reasons why persons skilled in the art would not recognize in the disclosure a description of the invention defined by the claims. By pointing to the fact that claim

1 reads on embodiments outside the scope of the description, the PTO has satisfied its burden. Appellants thus have the burden of showing that the upper limit of solids content described, i.e., 60%, is inherent in "at least 35%," as that limitation appears in claim 1. Appellants have adduced no evidence to carry this burden as to claim 1, and they argue only that since the Pfluger patent contains claim 1 supported by Pfluger's disclosure with a stated upper limit of 60%, like appellants' Swiss disclosure, refusal to grant appellants claim 1 amounts to an illegal reexamination of claim 1 in Pfluger. However, as we have often repeated, as recently as *In re Giolito*, 530 F.2d 397, 188 USPQ 645 (CCPA 1976), it is immaterial in ex parte prosecution whether the same or similar claims have been allowed to others.

[7] Claim 4 contains the additional limitations, relating to the "final product temperature" and the pressure at which the frozen foam is vacuum freeze-dried, of "less

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than 100°F. and "less than 500 microns." "Final product temperature," it appears, refers to the temperature at which so-called bound water is driven off from the product by heating after the vacuum drying phase has ended. We find no description of final product temperature in appellants' Swiss application. It is not disputed that appellants do not expressly disclose final product temperatures or this secondary drying step. They again appeal, however, to the Pfluger patent disclosure and to an amendment entered in the application on appeal (not objected to as new matter by the examiner) to show that final product temperatures are conventional in the art and need not be expressly disclosed. The amendment is clearly irrelevant since claim 4, an originally filed claim, is its own written description in the appealed application. *In re Gardner*, 475 F.2d 1389, 177 USPQ 396, rehearing denied, 480 F.2d 879, 178 USPQ 149 (CCPA 1973). The issue is whether the Swiss application describes the claimed final product temperature, not whether the instant application does so. The Pfluger patent disclosure is also unavailable to appellants. The Swiss application was filed before Pfluger issued, which means that for the purposes of § 112 the Pfluger disclosure is not evidence of what those skilled in the art considered conventional at the time the Swiss application was filed. *In re Glass*, 492 F.2d 1228, 181 USPQ 31 (CCPA 1974). ²

Claims 1 and 4, therefore, are not entitled to the benefit of the filing date of appellants' Swiss application.

[8] Claims 2, 37, and 38, which claim a solids content range of "between 35% and 60%," present a different question. They clearly claim a range *within* the described broad range of 25% to 60% solids; the question is whether, *on the facts*, the PTO has presented sufficient reason to doubt that the broader described range also describes the somewhat narrower claimed range. We note that there is no evidence, and the PTO does not contend otherwise, that there is in fact any distinction, in terms of the operability of appellants' process or of the achieving of any desired result, between the claimed lower limit of solids content and that disclosed in the Swiss application. We see an important practical distinction between broad generic *chemical compound* inventions, for example, as in *In re Ruschig*, *supra*, in which each compound within the genus is a separate embodiment of the invention, and inventions like that at bar, in which the range of solids content is but one of several process parameters. What those skilled in the art would expect from using 34% solids content in the concentrated extract prior to foaming instead of 35% is a different matter from what those skilled in the art would expect from the next adjacent homolog of a compound whose properties are disclosed in the specification. We wish to make it clear that we are not creating a rule applicable to all description requirement cases involving ranges. Where it is clear, for instance, that the broad described range pertains to a different invention than the narrower (and subsumed) claimed range, then the broader range does not describe the narrower range. *In re Baird*, 52 CCPA 1747, 348 F.2d 974, 146 USPQ 579 (1965); *In re Draeger*, 32 CCPA 1217, 150 F.2d 572, 66 USPQ 247 (1945).

[9] In the context of *this* invention, in light of the description of the invention as employing solids contents within the range of 25-60% along with specific embodiments of 36% and 50%, we are of the opinion that, as a factual matter, persons skilled in the art would consider processes employing a

35-60% solids content range to be part of appellants' invention and would be led by the Swiss disclosure so to conclude. Cf. *In re Ruschig*, supra. The PTO has done nothing more than to argue lack of literal support, which is not enough. If lack of literal support alone were enough to support a rejection under § 112, then the statement of *In re Lukach*, supra, 58 CCPA at 1235, 442 F.2d at 969, 169 USPQ at 796, that "the invention claimed does not have to be described in *ipsis verbis* in order to satisfy the description requirement of § 112," is empty verbiage. The burden of showing that the claimed invention is not described in the specification rests on the PTO in the first instance, and it is up to the PTO to give reasons why a description not in *ipsis verbis* is insufficient.

We conclude, therefore, that claims 2, 37, and 38 are entitled to the benefit of the filing date of appellants' Swiss application.

Since the Pfluger patent is not available as prior art as of its 1966 date under §§ 102(e) and 103 against claims 2, 37, and 38, the rejection of those claims is reversed. The rejection of claims 1 and 4 is affirmed. Appellants filed no affidavit under Rule 204(c) showing a date of invention for claims 1 and 4 prior

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to Pfluger's 1966 filing date, *In re Gemassmer*, 51 CCPA 726, 319 F.2d 539, 138 USPQ 229 (1963), and have not antedated Pfluger as to those claims under 35 USC 119 and 120.

The New Matter Rejection

[10] The issue to be decided here is whether the limitation appearing in claim 6, carried forward into the other claims affected by this rejection, that the frozen foam be ground "to a particle size of at least 0.25 mm" before it is dried, was added to the instant application in violation of 35 USC 132. This new matter rejection rests on a finding by the PTO that the application as filed did not describe this limitation. Thus, the converse of what we said in *In re Bowen*, 492 F.2d 859, 864, 181 USPQ 48, 52 (CCPA 1974), is true in this case, namely, that this new matter rejection is tantamount to a rejection of the claims on the description requirement of 35 USC 112, first paragraph. The solicitor agrees with this.

We conclude that the originally filed specification clearly conveys to those of ordinary skill in the art that appellants invented processes in which the frozen foam is ground to a particle size of "at least 0.25 mm," and not, as the PTO asserts, only processes in which the particle sizes are no larger than 2 mm. See *In re Smythe*, supra.

The specification states, *inter alia* (emphasis ours):

At the end of the [cooling] belt the extract is removed as a continuous rigid sheet which *may* then be broken up into fragments suitable for grinding. These fragments *may, for example*, be ground to a particle size which is *preferably* within the range 0.25 to 2.0 mm.

In a modification of the process, the frozen extract may be freeze-dried in the form of *plates or lumps* which are *subsequently* ground to the desired particle size.

The examples speak of drying frozen ground particles of sizes between 0.1 and 2 mm. While the specification indicates that the 0.25 to 2.0 mm range is preferred, we think it clearly indicates that, as an alternative embodiment of appellants' invention, the foam may be dried in lumps or plates of undisclosed size, which are reduced to the obviously smaller preferred particle size by grinding only *after* being dried. The solicitor argues that the claimed "range" has no upper limit, wherefore it is not disclosed. The clear implication of this disclosed modification is that appellants' specification does describe as their invention processes in which particle size is "at least 0.25 mm," without upper limit, as delineated by the rejected claims. The rejection of claims 6-10, 12-15, 17, and 26 under 35 USC 132 is reversed.

The "Non-Interference" Claims — 6-35 and 40-43

In the Examiner's Answer, appellants were granted the benefit of the filing date of their Swiss application for claims 16-25, 27-35, and 40-43. The examiner stated: "Claims 6-15 and 26, except for new matter, would otherwise be supported in the Swiss application." Our reversal of the new matter rejection eliminates the basis for the examiner's refusal to give claims 6-15 and 26 the benefit of appellants' Swiss filing date. Appellants' parent and Swiss applications contain the same disclosures concerning particle size as does the application on appeal, and we shall treat all the claims under this heading as entitled to the right of foreign priority claimed by appellants.

Our analysis of these claims will be broken down by the type of claim involved, i.e., process, apparatus, and product, and not as the board addressed them. In each discussion we will apply as prior art under § 102(e) only those portions of the Pfluger patent disclosure that were carried forward from the Pfluger 1963 application (Pfluger 1963) through the two subsequent applications into the patent, as did the board. In re Lund, supra.

A. Process Claims 6-14 and 16-29

There are four independent process claims: claims 6, from which claims 7-14, 16, and 17 depend; claim 18; claim 19, from which claim 20 depends; and claim 21, from which claims 22-29 depend.

Pfluger 1963 contains the following disclosure, which, in substance, is carried forward into the patent:

This invention is founded on the discovery that an aqueous aromatic liquid containing solids in suspension and solution may be dried without undergoing loss of aromatic volatiles by a process which comprises foaming the aqueous liquid to a substantial overrun while avoiding evaporation of said aqueous liquid, freezing said foam to below its eutectic point while avoiding evaporation of the aqueous liquid, subliming said aqueous liquid from the frozen foam to reduce the moisture of the foam to at least 10-20%, and further drying the foam to a stable moisture content.

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In many applications such foaming can be considerably increased by concentrating the solution or suspension to a relatively high solids content prior to incorporation of air or other gas such as nitrogen therein by first whipping and then freezing the foam, preferably by conductive freezing. During the foaming step, it is essential in order to prevent loss of volatiles to avoid any evaporative cooling of the material, i.e., evaporation of water during the foaming step. Also, during the freezing step evaporative cooling should be avoided. Other ways for creating a frozen foam without undergoing evaporative cooling involve the overt introduction to a solution or suspension of dry ice, i.e., solid carbon dioxide in a suitably ground or particulate form, whereby carbon dioxide gas is liberated upon subliming of the "dry ice" to cause foaming of the solution or suspension to occur. Similarly, refrigerated air or nitrogen can be introduced to the solution or suspension to cause freezing thereof incident to foaming the material. The foam preferably has a high overrun whereby the density of the solution or suspension is changed from above 1.0 gm./cc. to between 0.1-0.5 gms/cc.

Example I, the sole disclosed embodiment in which the foam density is given, shows foaming the extract to a density of 0.22 gm/cc.

Claims 19 and 20 recite a foam density of "between about 0.6 and about 0.8 gm/cc," outside the range disclosed by Pfluger 1963. The examiner's position was that Pfluger's disclosure of 0.5 gm/cc as an upper density limit suggests "about 0.6 gm/cc" as the lower limit in the processes of claims 19 and 20 "in the absence of a critical difference between them." We see no such suggestion. By

preferring a high foam overrun, i.e., lower rather than higher foam densities, Pfluger 1963 teaches away from employing higher foam densities than its disclosed upper limit of 0.5 gm/cc. Appellants' "about 0.6 gm/cc" lower limit is sufficiently precise to describe foam densities above 0.5 gm/cc and thus outside the range of foam densities that persons of ordinary skill in the art would have been motivated to use by Pfluger 1963's disclosure of a preference for high overrun foams no denser than 0.5 gm/cc. The examiner's comment about the lack of a showing of a critical difference is based on his failure to appreciate that Pfluger 1963 teaches away from increasing foam density. The rejection of claims 19 and 20 under § 103 is reversed.

[11] Claims 6-14, 16, 17, and 21-29 recite foam density ranges of "between about 0.4 and 0.8 gm/cc" and solids contents in the range of "about 25% to 60%." Claims 6-10, 12-14, 17, and 26 recite particle sizes of "at least 0.25 mm," claims 16 and 27 say "about 0.25 to 2 mm," claims 11 and 28 recite particle sizes "approximately equal to that of roast and ground coffee," and claims 21-25 do not mention particle size. Pfluger 1963's disclosed foam density range of 0.1-0.5 gm/cc covers values within the scope of all the above-listed claims; the solids contents disclosed in Pfluger 1963 Examples I (27%) and V (30%) are within the claimed ranges of 25-60%. Pfluger 1963 clearly teaches a process for making instant coffee comprising the steps of preparing and concentrating aqueous coffee extract, foaming the extract then freezing the foam, and drying the frozen foam, in that order. Pfluger 1963 teaches fragmenting the frozen foam into ¾-inch pieces before drying; ¾ inch is, of course, "at least 0.25 mm." Of course, the disclosure in the prior art of any value within a claimed range is an anticipation of the claimed range. We appreciate the arguments made in *In re Malagari*, 499 F.2d 1297, 182 USPQ 549 (CCPA 1974), and the discussion in *In re Orfeo*, 58 CCPA 1123, 440 F.2d 439, 169 USPQ 487 (1971), to the effect that ranges which overlap or lie inside ranges disclosed by the prior art may be patentable if the applicant can show criticality in the claimed range by evidence of unexpected results. The rejections here are under § 103, not § 102, which requires us to consider appellants' argument that their invention and Pfluger's disclosure are directed to different purposes and that persons of ordinary skill in the art would not look to Pfluger 1963 for a solution to the problem addressed by appellants. See *In re Orfeo*, supra.

[12] Appellants' contentions were thus stated in their main brief:

The Board erred at the threshold in failing to appreciate that neither the Pfluger patent nor the 1963 Pfluger application gives any inkling or hint of the inventive concept underlying the rejected claims. * * * The Pfluger disclosures make no mention of product bulk density and contain no suggestion of altering or regulating that density in any manner. Neither does the reference suggest appellants' step of grinding the foam before freeze drying.

One of ordinary skill in the art reading the 1963 Pfluger disclosure would have no

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inkling of the problem addressed and solved by appellants; and one looking for ways to meet that problem would have no occasion to consider Pfluger or his expedients.

Without an antecedent basis for it in their application, appellants may not use this rationale to show unobviousness. *In re Davies*, 475 F.2d 667, 177 USPQ 381 (CCPA 1973). While appellants do disclose what the bulk density of their product "usually" is, we find no suggestion in appellants' application that their invention is addressed to the regulation of the bulk density of the product, and the claims make no express reference to such regulation. The only references in appellants' disclosure to this alleged problem and its solution which are apparent to us are (emphasis ours):

After freeze-drying, the coffee extract is obtained in the form of a powder the density of which is *usually* 0.2 to 0.3 gm/cc.

Drying of the concentrated extract should *desirably* be carried out *under controlled conditions* such that the finished product possesses an appropriate *density* and colour. * * *

* * * The conditions of freezing, notably belt speed, freezing temperature, thickness of foam layer as well as the *density of the foam*, are factors which have an important *influence* on the *colour* of the finished product and should therefore be carefully controlled.

The inadequacy of this disclosure is evident. There is no mention of *regulating* the final product density or of controlling solids content. We therefore see no basis for depreciating Pfluger as evidence of the scope and content of the prior art, as well as of the level of ordinary skill in this art, as appellants would have us do. Nor is there any factual basis for concluding that the ranges claimed by appellants are critical in themselves to their alleged inventive contribution.

[13] We find no error in the rejection under § 103 of claims 6-14, 16, and 21-28, which recite no final product density. The only difference between claims 6, 12-14, and 16 and the Pfluger 1963 disclosure upon which appellants rely to show the unobviousness of the subject matter of the claims (and which does not relate to solids content or foam density) is the step of "grinding the frozen foam to a particle size of at least 0.25 mm" *prior* to freeze-drying. ²Pfluger 1963, appellants assert, "fragments" the frozen foam prior to drying and "grinds" the foam only after it has been dried. As indicated above, the size of the fragments of frozen foam disclosed by Pfluger 1963 is "at least 0.25 mm." We do not think this difference shows the subject matter to be unobvious. Pfluger 1963 implies that the sizes of foam particles before and after drying are comparable; it would have been obvious to reduce the size of the foam particles by suitable mechanical means, whether it be called fragmenting or grinding, to the desired end product size before rather than after drying. Claim 11 differs only in its recitation of final product particle size, which Pfluger 1963 shows is an obvious matter of choice for those of ordinary skill in the art, who know how large ground roasted coffee bean particles are. The commercial motivation for making the particles this size is obvious. Appellants have not argued the patentability separately from claim 6 of claims 9 and 10, which add temperature and foam thickness limitations suggested by Pfluger and De George, as discussed *infra* in considering claims 24 and 25.

[14] Claim 8 likewise recites no final product density, but it requires that the freezing of the foam take place over a period of 7 to 25 minutes, which, appellants' application indicates, produces instant coffee "having a pleasant dark colour." Pfluger 1963 discloses freezing in liquid nitrogen or liquid air, which would be instantaneous, or rapid freezing on a belt, and states further, "The foam may be frozen at a high or a more gradual rate *without any apparent difference* in the utility thereof insofar as freeze drying is concerned * * *." (Emphasis ours.) Appellants have not shown that only their claimed freezing time produces coffee with a pleasant dark color. Thus, they have not overcome the *prima facie* case of obviousness made out by Pfluger 1963.

In light of appellants' concession in the amendment in which they added claims 37-39 that freeze concentration was known in the art, the rejection of claims 21-23, and 26-28 under Category VI, *supra*, becomes little more than a rejection on Pfluger 1963 alone. With the exception of freeze concentration, which is disclosed by the British patent, every element of claim 21 is disclosed by Pfluger 1963, as indicated *supra*. Appellants advance no arguments for the patentability of claim 21 different from those

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we have already rejected for claim 6. Claim 22 adds only a recitation of the inert gases used in the foaming step, which were known in the prior art. Claims 26-28 recite the particle sizes of claims 6, 16, and 11, respectively; these particle sizes are not sufficient to show unobviousness for the reasons given *supra*. Claim 23, which was also rejected under Category VI, recites the freezing time of claim 8. It is unpatentable for the same reasons given for claim 8, *supra*.

Claims 24 and 25, to which Pfluger 1963, De George, and the British patent were applied under § 103, call for the temperature and foam limitations already discussed under claims 9 and 10, *supra*. Temperature and foam thickness within the claimed ranges are disclosed by Pfluger 1963 in

Example VI (freezing foam at — 30°F. on a belt and subsequently loading foam onto trays to a 1-inch (approx. 25mm) depth for vacuum drying). Appellants do not allege that the ranges of claims 24 and 25 are critical.

[15] Claims 17, 18, and 29, on the other hand, recite the bulk density of the final product made by each process in positive terms. The board dismissed these final product density limitations as being merely recitations of the inherent result of observing the foam density and solids content ranges set forth in these claims. Although we found above that appellants' specification as filed does not disclose regulating product density by controlling the foam density and solids content in the process and that claims which failed to recite controlled product density could not rely on this feature to distinguish over the prior art under § 103, these claims do require such regulation or control, by implication through their express recitation of the density of the final product to be obtained from the processes they delimit. That persons skilled in the art may not know how to ensure the claimed final product densities from the specification is pertinent only to a rejection on the enablement requirement of § 112, first paragraph, which is not before us. The only question here is whether the subject matter of claims 17, 18, and 29, the scope of which is unquestionably clear, is obvious under § 103.

[16] Pfluger 1963 discloses no final product densities and contains no teaching on how to achieve any particular final product density from practicing its process. The inherency of final product density adverted to by the board can be gleaned only from appellants' disclosure, if anywhere, which may not be used against them as prior art absent some admission that matter disclosed in the specification is in the prior art. In re Kuehl, 475 F.2d 658, 177 USPQ 250 (CCPA 1973); cf. In re Nomiya, 509 F.2d 566, 184 USPQ 607 (CCPA 1975). In the absence of disclosure of final product densities or how to achieve any desired density in the prior art applied by the PTO to claims 17, 18, and 29, we cannot say that the subject matter of these claims would have been obvious to persons of ordinary skill in the art.

The rejection of process claims 6-14, 16, and 21-28 is affirmed; the rejection of claims 17-20, and 29 is reversed.

B. Apparatus Claims 30-35

[17] The preamble of independent claim 30, carried forward into claims 31-35, recites that the apparatus is "for carrying out the process in claim 6." Appellants contend that this preamble gives "life and meaning" to the claims, serving to define the interrelationship of the mechanical elements recited in the body of the claims. This argument appears to be based on *Kropa v. Robie*, 38 CCPA 858, 187 F.2d 150, 88 USPQ 478 (1951), the classic case in this court on the construction of claim preambles. In *Kropa* the court surveyed prior cases and said 38 CCPA at 861, 187 F.2d at 152, 88 USPQ at 480-81:

[I]t appears that the preamble has been denied the effect of a limitation where the claim or count was drawn to a structure and the portion of the claim following the preamble was a self-contained description of the structure not depending for completeness upon the introductory clause * * *. In those cases, the claim or count apart from the introductory clause completely defined the subject matter, and the preamble merely stated a purpose or intended use of that subject matter.

While we do not subscribe to the broad proposition that process limitations can never serve to distinguish the subject matter of apparatus claims from the prior art, we fail to see how the general process parameters of claim 6 require an arrangement of the apparatus means recited in claims 30-35 more specific than that set forth in the body of each claim. In no claim is the preamble relied on to provide an antecedent basis for terms in the body. See *In re Higbee*, 527 F.2d 1405, 188 USPQ 488 (CCPA 1976). The context of each invention is clear without reference to claim 6, unlike the situation in *Kropa*, supra, in which the preamble "An abrasive article" was the only portion of the claim defining the relationship of the components recited in the body of the claim; the court said,

"The term calls forth a distinct relationship between

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the proportions of grain and resin comprising the article." 38 CCPA at 862, 187 F.2d at 152, 88 USPQ at 481.

[18] Appellants do not argue the patentability of claims 32-35 separately from claim 30 and concede that Carpenter discloses the feature added in claim 31. We find that the teachings of Pfluger and De George (and Carpenter on claim 31) show that the subject matter of claims 30-35 would have been obvious to persons of ordinary skill in the art. These references are to be viewed for what they disclose in their entireties and not merely for their inventive contributions to the art. In re Ogiue, 517 F.2d 1382, 1387, 186 USPQ 227, 232 (CCPA 1975).

Pfluger 1963, in a portion carried forward to the patent, discloses the following:

Advantageously, in following the teachings of the present process either in a vacuum freeze drying application or in an atmospheric freeze drying application, the frozen foamy mass may be arranged for either batch or continuous processing in any one of a variety of conventional plant handling applications. Thus, the foamy mass can be readily transferred from one food handling station to another, deposited in trays or continuous belts, superimposed on one another or otherwise conventionally located in the vicinity of the freeze drying influences. In the case of a typical freeze drying operation the foams may be frozen and deposited onto trays stacked one above the other on a suitable heat transfer surface in a vacuum chamber. In the case of an atmospheric freeze drying application the foams can be stacked one upon the other upon a foraminous drying member permitting the circulation of the drying medium, e.g. dry air, helium or nitrogen. Throughout all of such freeze drying applications it is imperative that the temperature of the foamy mass be maintained below the eutectic point of the material while drying to assure that the foam stays in a substantially solid or frozen state as distinguished from a melted or semi-liquid state, dehydration of the mass being achieved by a process of sublimation as distinguished from one of evaporation. Such conditions should be followed at least until the moisture content of the foamy mass has been substantially reduced to a point where it has lost at least a majority of its moisture and preferably is superficially dry to the touch, i.e. in the neighborhood of 10-20% moisture by weight.

Example VI of Pfluger 1963, which is carried forward as Example III of the Pfluger patent, shows heat controlling the vacuum chamber to assure a product temperature below —10°F. (De George teaches that the melting point of a 28% solids content extract is about 27°F., whereas the eutectic temperature is constant regardless of concentration at about —13.5°F.) De George discloses the use of endless belts, low speeds, and refrigerating means, and appellants, while arguing that De George treats the handling of solid slabs of frozen extract on refrigeration belts and not frozen foamed extracts, do not and cannot deny that De George discloses apparatus that persons of ordinary skill in the art would have deemed *suitable* for handling foams in the manner shown by Pfluger. Appellants also contend that neither reference discloses the "spreading device" recited in the claims, Pfluger 1963 showing only the application of $\frac{1}{8}$ diameter ribbons of foam through a nozzle to stationary freeze drying trays. The reference in the portion of Pfluger 1963 quoted supra to the deposition of the foam on the belts is ample suggestion, in our opinion, that some means must be employed to apply the foamy mass to the continuous belts. The term "spreading device" is not defined in any special way by appellants and is broad enough to be the means for applying the foam to the belt suggested by Pfluger. The rejection of claims 30-35 is affirmed.

C. Product Claims 15 and 40-43

[19] These claims are cast in product-by-process form. Although appellants argue, successfully we have found, that the Pfluger 1963 disclosure does not suggest the control of bulk density afforded by appellants' process, the patentability of the *products* defined by the claims, rather than the processes

for making them, is what we must gauge in light of the prior art. See *In re Bridgeford*, 53 CCPA 1182, 357 F.2d 679, 149 USPQ 55 (1966). Each of these claims defines a freeze-dried instant coffee product made by processes which, appellants have contended with respect to their process claims, produce, by virtue of the foam density and solids content ranges taught by appellants, products having a bulk density comparable to spray-dried instant coffee, i.e., 0.2-0.3 gm/cc as indicated in appellants' specification. The solids content and foam density ranges disclosed by Pfluger 1963 overlap those of appellants, and, it appears, the Pfluger process using solids contents and foam densities overlapping those of appellants will produce instant coffee which is indistinguishable from appellants' products. There is no evidence showing that Pfluger's product prepared, for example, using an extract of 30% solids con

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tent foamed to a density of 0.5 gm/cc differs from appellants' claimed products in any way, certainly not in any unobvious way. See *In re Avery*, 518 F.2d 1228, 1233-34, 186 USPQ 161, 165-66 (CCPA 1975). That *some* of the products *covered* by appellants' claims may not be disclosed or suggested by Pfluger 1963 is not relevant to patentability, since the claims embrace other subject matter completely disclosed by Pfluger 1963, complete disclosure in the prior art being the epitome of obviousness. *In re Pearson*, 494 F.2d 1399, 181 USPQ 641 (CCPA 1974). The rejection of these product claims under § 103 on Pfluger² is affirmed.

Conclusion

The appeal is dismissed as to withdrawn claims 3, 5, 36, and 39. The decision of the board is affirmed as to claims 1, 4, 6-16, 21-28, 30-35, and 40-43, and is reversed as to claims 2, 17-20, 29, 37, and 38.

APPENDIX

2. The process of claim 1 wherein the extract is concentrated to between 35% and 60% soluble solids prior to the foaming step.
3. The process of claim 2 wherein the concentrated extract is foamed to an overrun density of between 0.1 to 0.7 gm/cc.
4. The process of claim 2 wherein the frozen foam is vacuum freeze-dried at a pressure of less than 500 microns and a final product temperature of less than 110°F.
5. The process of claim 3 wherein the frozen foam is vacuum freeze-dried at a pressure of less than 500 microns and a final product temperature of less than 110°C.
7. A process according to claim 6 in which said inert gas is at least one of the following gases, namely carbon dioxide, nitrous oxide and nitrogen
8. A process according to claim 6 in which the foam is frozen during 7 to 25 minutes.
9. A process according to claim 6 in which the foam is frozen on a moving belt which is cooled to a temperature between —12 and —70°C.
10. A process according to claim 6 wherein the foam is spread on the belt at a layer thickness of 10 to 40 mm.
11. A process according to claim 6 in which the frozen foam is ground, before freeze-drying, to a particle size approximately equal to that of roast and ground coffee.
12. A process according to claim 6 in which an aromatic condensate obtained by stripping roast and ground coffee is added to said concentrated extract before it is transformed into a foam.

13. A process according to claim 6 in which, after freeze-drying, the powdered coffee extract is aromatised by incorporation therein of 0.1 to 0.5% by weight of an aromatic condensate obtained by stripping of roast and ground coffee.
14. A process according to claim 13 in which said condensate is incorporated in said powdered extract in admixture with an oily carrier.
15. The coffee extract obtained by the process defined in claim 6.
16. Process according to claim 6 in which the frozen foam is ground to a particle size of about 0.25 to 2.0 mm.
17. Process according to claim 6 in which the freeze dried extract has a density of about 0.2 to 0.3 gm/cc.
18. Process for preparing a soluble coffee extract, which comprises adding inert gas to a concentrated aqueous extract of roast coffee having a solids content of about 25% to about 60% to provide a foam, freezing the foam to a solid mass, reducing the frozen foam to particles having a size of about 0.25 to 2.0 mm and freeze drying the frozen particles, the amount of inert gas added to the aqueous extract being sufficient to provide a freeze dried extract having a density between about 0.2 and 0.3 gm/cc.
19. Process for preparing a powdered coffee extract which comprises adding sufficient inert gas to a concentrated aqueous extract of roast coffee to provide a foam having a density between about 0.6 and about 0.8 gm/cc, freezing the foamed extract to a solid mass, grinding the frozen foam to an average particle size of 0.1 to 0.5 mm, freeze drying the ground particles to provide a finely powdered coffee extract, and agglomerating the finely powdered coffee extract.
20. Process according to claim 19, in which the powdered extract is agglomerated to provide an agglomerate having a density of about 0.2 to 0.3 gm/cc.
21. Process for preparing a powdered coffee extract which comprises increasing the soluble coffee solids content of an aqueous extract of roast ground coffee to about 25% — 60% by freeze concentration, separating the concentrated extract from ice crystals, adding an inert gas to the concentrated aqueous extract to provide a foam having a density between about 0.4 and 0.8 gm/cc, freezing the foam to a solid mass and freeze drying the frozen foam.
22. Process according to claim 21 in which the inert gas is selected from the group consisting of carbon dioxide, nitrous oxide and nitrogen.
23. Process according to claim 21 in which the foam is frozen during 7 to 25 minutes.
24. Process according to claim 21 in which the foam is frozen on a moving belt which is cooled to a temperature between —12 and —70°C.
25. Process according to claim 24 wherein the foam is spread on the belt at a layer thickness of 10 to 40 mm.

26. Process according to claim 21 in which the frozen foam is ground before freeze drying to a particle size of at least 0.25 mm.
27. Process according to claim 26 in which the frozen foam is ground to a particle size of about 0.25 to 2 mm.

28. Process according to claim 21 in which the frozen foam is ground before freeze drying to a particle size approximately equal to that of roast and ground coffee.
29. Process according to claim 21 in which the freeze dried extract has a density of about 0.2 - 0.3 gm/cc.
31. An apparatus according to claim 30 in which the means for cooling the belt includes a plurality of sprinklers disposed to spray the refrigerant onto the underside of the belt.
32. An apparatus according to claim 30 in which the belt comprises two sections each provided with separate cooling means, the first of said sections being cooled to a temperature of -12 to -29°C and the second section to -40 to -70°C .
33. An apparatus according to claim 30 also comprising means for fragmenting and milling the frozen foam.
34. An apparatus according to claim 30 in which the length of said belt is 15 to 25 metres and the driving means is adapted to move said belt at a linear speed of about 0.5 to 1.5 m/min.
35. An apparatus according to claim 30 in which said chamber is adapted to be maintained at a temperature of -25 to -45°C .
36. The process of claim 2 wherein the concentrated extract is foamed to an overrun density of between about 0.1 to 0.8 gm/cc.
37. The process of claim 2 wherein the concentrated [506] extract is foamed to an overrun density of between 0.4 to 0.8 gm/cc.
38. The process of claim 2 wherein the frozen foam is vacuum freeze-dried at a pressure of about 150 to 175 microns.
39. The process of claim 3 wherein the frozen foam is vacuum freeze-dried at a pressure of about 150 to 175 microns.
41. A coffee powder according to claim 40 wherein the extract before freeze drying contains about 25% to 60% by weight of soluble coffee solids.
42. A dry coffee powder having a density of about 0.2 to 0.3 gm/cc and comprising a freeze dried particulated foamed extract of roast and ground coffee, said extract containing before freeze drying up to about 60% by weight of soluble coffee solids.
43. A coffee powder according to claim 42 containing about 0.1% to 0.5% by weight of aromatic condensate obtained by stripping roast and ground coffee.

Footnotes

Footnote 1. A continuation (or continuation-in-part, as the examiner has required it to be denominated) of application serial No. 537,679, filed March 28, 1966. Appellants claim the benefit of a Swiss application filed April 2, 1965. The title of the application on appeal is somewhat inaccurate, as the application contains claims to apparatus for drying and dried instant coffee products as well as to a drying method.

Footnote 2. So that consumers may continue to use the same amount of freeze-dried instant coffee per cup as conventional instant coffee without change in the strength of the beverage that they are accustomed to.

Footnote 3. 37 CFR 1.204(c):

When the effective filing date of an applicant is more than three months subsequent to the effective filing date of the patentee, the applicant, before the interference will be declared, shall file two copies of affidavits or declarations by himself, if possible, and by one or more corroborating witnesses, supported by documentary evidence if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would prima facie entitle him to an award of priority with respect to the effective filing date of the patent. This showing must be accompanied by an explanation of the basis on which he believes that the facts set forth would overcome the effective filing date of the patent.

Footnote 4. The examiner and the board did not rely on Pfluger 1963 because the solids content and foam density ranges of the copied claims were not described in that application. In re Lund, 54 CCPA 1361, 376 F.2d 982, 153 USPQ 625 (1967).

Footnote 5. Peebles U. S. patent No. 2,897,084, issued July 28, 1959, was cited against claims 19 and 20 to show that agglomerating fine dried coffee particles into larger grounds was old in the art. Appellants have acknowledged this to be true, so it is not necessary to discuss Peebles further.

Footnote 6. The solicitor belatedly asserts that the Swiss application is not "for the same invention" as the parent application, insofar as claims 1, 2, and 4 are concerned; he argues that the expression "same invention" in 35 USC 119 should be given the meaning employed by us in the double patenting cases, e.g., In re Vogel, 57 CCPA 920, 422 F.2d 438, 164 USPQ 619 (1970). As we indicated in In re Ziegler, 52 CCPA 1473, 347 F.2d 642, 146 USPQ 76 (1965), the solicitor's reading is too narrow. All § 119 requires is that the foreign application describe and seek protection for "broadly the same invention" as described in the U.S. application claiming its benefit. 52 CCPA at 1481, 347 F.2d at 649, 146 USPQ at 82. The Swiss application has essentially the same disclosure as appellants' parent application and claims broadly the same invention.

Footnote 7. That the final product temperature limitation is not material, as appellants argue, does not matter when the limitation is copied. Immateriality excuses only *failure* to copy a limitation of a patent claim. See Brailsford v. Lavet, 50 CCPA 1367, 318 F.2d 942, 138 USPQ 28 (1963); 37 CFR 1.205(a).

Footnote 8. Appellants do not deny that the features added in claims 7, 12, 13, and 14 are taught in the art, and the record shows them to be known in the prior art.

Footnote 9. Appellants argue in their reply brief that claims 40-43 "were never the subject of an accurate or proper rejection," because the examiner and the board incorrectly grouped them with other claims. As we have indicated, the rejection of claims 40-43 on Pfluger under § 103 was "proper"; appellants do not contend that they could not understand the basis for the rejection because of failure of the PTO to give clear reasons for its action under 35 USC 132, and we find the explanations given by the examiner and board with respect to claims 40-43 to have been legally ample under § 132. Cf. In re Gustafson, 51 CCPA 1358, 331 F.2d 905, 141 USPQ 585 (1964).

Concurring/Dissenting Opinion Text

Concurrence/Dissent By:

Baldwin, Judge, concurring in part and dissenting in

I agree with Judge Miller's treatment of claims 17-20 and 29. Otherwise, I join the majority opinion.

Concurring/Dissenting Opinion Text

Concurrence/Dissent By:

Miller, Judge, dissenting in part and concurring in part.

I dissent on claim 1. The error of the majority in affirming the rejection stems from a misstatement of the issue. It is not necessary when antedating a reference under 35 USC 102(a) or (e) to establish a prior reduction to practice, constructive or actual, of *all* the subject matter falling within the claims. It is necessary only to establish a reduction to practice of sufficient subject matter to render the claimed invention obvious to one of ordinary skill in the art. In *re Spiller*, 500 F.2d 1170, 182 USPQ 614 (CCPA 1974). The majority errs, therefore, in seeking a description in appellants' parent and foreign priority applications to support the entire claimed subject matter as though these were the applications in which the claims appear. See *In re Ziegler*, 52 CCPA 1473, 347 F.2d 642, 146 USPQ 76 (1965). Appellants have clearly shown possession of enough of the invention to antedate Pfluger 1966 by establishing a prior constructive reduction to practice in their parent and foreign applications of specific embodiments disclosing concentrating to 50% and 36% total solids and by a broader disclosure of "25 to 60%."

Although the rejection of claim 1 arises in the context of an attempt to initiate an interference, the rejection is clearly under 35 USC 102(a) or (e) and not under Rule 204(c), 37 CFR 1.204(c). Even if the rejection were under that rule, the substance of the rule's requirement for evidence sufficient to establish a *prima facie* case for a judgment of priority against Pfluger 1966 would be satisfied by the prior constructive reduction to practice of embodiments within claim 1 in appellants' parent and foreign applications. *Hunt v. Treppschuh*, 523 F.2d 1386, 187 USPQ 426 (CCPA 1975); *Fontijn v. Okamoto*, 518 F.2d 610, 186 USPQ 97 (CCPA 1975).

The majority cites *In re Gemassmer*, 51 CCPA 726, 319 F.2d 539, 138 USPQ 229 (1963), to support its decision on claim 1. It suffices to note that *Gemassmer* was decided more than a decade before *In re Spiller*, *Hunt v. Treppschuh*, and *Fontijn v. Okamoto*, *supra*.

I concur in the decision on claim 4 since appellants' parent and foreign applications are silent regarding final product temperature and a secondary heating step and, therefore, fail even as a constructive reduction to practice of the invention of claim 4.

I concur also in the decision on claims 19 and 20, but I do not find it necessary to hold, as the majority implicitly does, that "about 0.6" gm/cc excludes 0.5 gm/cc disclosed in the reference as the upper limit of merely a *preferred* range. Moreover, it is obvious from the reference that the process would work at a higher density than 0.5,

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although inferior results might be expected. My concurrence rests on the requirement of claims 19 and 20 of a specific sequence of steps not suggested by the prior art, namely: providing a high density of about 0.6 to about 0.8 gm/cc, grinding to a fine particle size prior to freeze drying, freeze drying, and finally agglomerating the fine particles into larger particles. This achieves a "highly coloured product of regular particle size." There is no suggestion in the prior art of deliberately grinding to a fine size and then agglomerating to a larger size.

I dissent on claims 17, 18, and 29, because there is at least a *prima facie* relationship between product and foam densities. The board noted this by stating that "the freeze dried density of the coffee would be inherent in view of the same range of foam overrun density disclosed by Pfluger." Since the foam densities and other conditions disclosed by Pfluger for the process claimed are approximately the same, appellants should be required either to show that the reference does not achieve the same product densities or to establish criticality. Since they have not done so, I would affirm the rejection of claims 17, 18, and 29.

- End of Case -

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ISSN 1526-8535

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FULL TEXT OF CASES (USPQ2D)

All Other Cases

Verdegaal Brothers Inc. v. Union Oil Company of California (CA FC) 2 USPQ2d 1051 (3/12/1987)

Verdegaal Brothers Inc. v. Union Oil Company of California (CA FC) 2 USPQ2d 1051

Verdegaal Brothers Inc. v. Union Oil Company of California

U.S. Court of Appeals Federal Circuit
2 USPQ2d 1051

Decided March 12, 1987

No. 86-1258

Headnotes

PATENTS

1. Patentability/Validity -- Anticipation -- Prior art (§ 115.0703)

Federal district court erred in denying patent infringement defendant's motion for judgment n.o.v., in view of evidence demonstrating that claims for making urea-sulfuric acid fertilizer, including claims that reaction be conducted in "heat sink" of recycled fertilizer to prevent high temperature buildup, were anticipated by prior art patent that specifically detailed process for making such urea-sulfuric acid products and that explicitly taught that base or "heel" of recycled fertilizer can be used to make more of product, even if patentee of prior art did not recognize that heel functioned as heat sink, since heat sink property was inherently possessed by heel.

Particular patents -- Fertilizers

4,310,343, Verdegaal and Verdegaal, Process for Making Liquid Fertilizer, holding of validity and infringement reversed.

Case History and Disposition:

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Appeal from District Court for the Eastern District of California, Coyle, J.

Action by Verdegaal Brothers Inc., William Verdegaal, and George Verdegaal, against Union Oil

Company of California, and Brea Agricultural Services Inc., for patent infringement. From decision denying defendants' motion for judgment notwithstanding the verdict, defendants appeal. Reversed.

Attorneys:

Andrew J. Belansky of Christie, Parker & Hale (David A. Dillard, with him on the brief), all of Pasadena, Calif., for appellants.

John P. Sutton of Limbach, Limbach & Sutton (Michael E. Dergosits, with him on the brief), all of San Francisco, Calif., for appellees.

Judge:

Before Markey, Chief Judge, and Davis and Nies, Circuit Judges.

Opinion Text

Opinion By:

Nies, Circuit Judge.

Union Oil Company of California and Brea Agricultural Services, Inc. (collectively Union Oil) appeal from a judgment of the United States District Court for the Eastern District of California, No. CV-F-83-68 REC, entered on a jury verdict which declared U.S. Patent No. 4,310,343 ('343), owned by Verdegaal Brothers, Inc., "valid" and claims 1, 2, and 4 thereof infringed by Union Oil. Union Oil's motion for judgment notwithstanding the verdict (JNOV) was denied. We reverse.

I

BACKGROUND

The General Technology

The patent in suit relates to a process for making certain known urea-sulfuric acid liquid fertilizer products. These products are made by reacting water, urea (a nitrogen-containing chemical), and sulfuric acid (a sulfur-containing chemical) in particular proportions. The nomenclature commonly used by the fertilizer industry refers to these fertilizer products numerically according to the percentages by weight of four fertilizer constituents in the following order: nitrogen, phosphorous, potassium, and sulfur. Thus, for example, a fertilizer containing 28% nitrogen, no phosphorous or potassium, and 9% sulfur is expressed numerically as 28-0-0-9.

The Process of the '343 Patent

The process disclosed in the '343 patent involves the chemical reaction between urea

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and sulfuric acid, which is referred to as an exothermic reaction because it gives off heat. To prevent high temperature buildup, the reaction is conducted in the presence of a nonreactive, nutritive heat sink which will absorb the heat of reaction. Specifically, a previously-made batch of liquid fertilizer -- known as a "heel" -- can serve as the heat sink to which more reactants are added. Claims 1 and 2 are representative:

1. In a process for making a concentrated liquid fertilizer by reacting sulfuric acid and urea, to form an end product, the improvement comprising:
 - a. providing a non-reactive, nutritive heat sink, capable of dissipating the heat of urea and sulfuric acid, in an amount at least 5% of the end product,
 - b. adding water to the heat sink in an amount not greater than 15% of the end product,
 - c. adding urea to the mixture in an amount of at least 50% of the total weight of the end product,
 - d. adding concentrated sulfuric acid in an amount equal to at least 10% of the total weight of the end product.

2. The process of claim 1 wherein the heat sink is recycled liquid fertilizer.

Procedural History

Verdegaal brought suit against Union Oil in the United States District Court for the Eastern District of California charging that certain processes employed by Union Oil for making liquid fertilizer products infringed all claims of its '343 patent. Union Oil defended on the grounds of noninfringement and patent invalidity under 35 U.S.C. §§102, 103. The action was tried before a jury which returned a verdict consisting of answers to five questions. Pertinent here are its answers that the '343 patent was "valid" over the prior art, and that certain of Union Oil's processes infringed claims 1, 2, and 4 of the patent. None were found to infringe claims 3 or 5. Based on the jury's verdict, the district court entered judgment in favor of Verdegaal.

Having unsuccessfully moved for a directed verdict under Fed. R. Civ. P. 50(a), Union Oil timely filed a motion under Rule 50(b) for JNOV seeking a judgment that the claims of the '343 patent were invalid under sections 102 and 103. The district court denied the motion without opinion.

II

ISSUE PRESENTED

Did the district court err in denying Union Oil's motion for JNOV with respect to the validity of claims 1, 2, and 4 of the '343 patent?

III

Standard of Review

When considering a motion for JNOV a district court must: (1) consider all of the evidence; (2) in a light most favorable to the non-moving party; (3) drawing all reasonable inferences favorable to that party; (4) without determining credibility of the witnesses; and (5) without substituting its choice for that of the jury's in deciding between conflicting elements of the evidence. *Railroad Dynamics, Inc. v. A. Stucki Co.*, 727 F.2d 1506, 1512-13, 220 USPQ 929, 936 (Fed. Cir.), *cert. denied*, 469 U.S. 871 [224 USPQ 520] (1984); *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1546, 220 USPQ 193, 197 (Fed. Cir. 1983). A district court should grant a motion for JNOV only when it is convinced upon the record before the jury that reasonable persons could not have reached a verdict for the nonmoving party. *Railroad Dynamics*, 727 F.2d at 1513, 220 USPQ at 936; *Connell*, 722 F.2d at 1546, 220 USPQ at 197.

To reverse the district court's denial of the motion for JNOV, Union Oil must convince us that either the jury's factual findings are not supported by substantial evidence, or, if they are, that those findings cannot support the legal conclusions which necessarily were drawn by the jury in forming its verdict. *See Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 893, 221 USPQ 669, 673 (Fed. Cir.), *cert. denied*, 469 U.S. 857 [225 USPQ 792] (1984). *Railroad Dynamics*, 727 F.2d at 1512, 220 USPQ at 936. Substantial evidence is more than just a mere scintilla; it is such relevant evidence from the record taken as a whole as a reasonable mind might accept as adequate to support the finding under review. *Consolidated Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938); *Perkin-Elmer*, 732 F.2d at 893, 221 USPQ at 673; *SSIH Equip. S.A. v. U.S. Int'l Trade Comm'n*, 718 F.2d 365, 371 n.10, 218 USPQ 678, 684 n.10 (Fed. Cir. 1983). A trial court's denial of a motion for JNOV must stand unless the evidence is of such quality and weight that reasonable and fair-minded persons in the exercise of impartial judgment could not reasonably return the jury's verdict. *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 758, 221 USPQ 473, 477 (Fed. Cir. 1984).

Our precedent holds that the presumption of validity afforded a U.S. patent by 35

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U.S.C. § 282 requires that the party challenging validity prove the facts establishing invalidity by clear and convincing evidence. *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1360, 220 USPQ 763, 770 (Fed. Cir.), *cert. denied*, 469 U.S. 821 [224 USPQ 520] (1984). Thus, the precise question to be resolved in this case is whether Union Oil's evidence is so clear and

convincing that reasonable jurors could only conclude that the claims in issue were invalid. *See Perkin-Elmer*, 732 F.2d at 893, 221 USPQ at 673; *Railroad Dynamics*, 727 F.2d at 1511, 220 USPQ at 935.

Anticipation

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *See, e.g., Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 715, 223 USPQ 1264, 1270 (Fed. Cir. 1984); *Connell*, 722 F.2d at 1548, 220 USPQ at 198; *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771, 218 USPQ 781, 789 (Fed. Cir. 1983), *cert. denied*, 465 U.S. 1026 [224 USPQ 520] (1984). Union Oil asserts that the subject claims of the '343 patent are anticipated under 35 U.S.C. § 102(e) 1 by the teachings found in the original application for U.S. Patent No. 4,315,783 to Stoller, which the jury was instructed was prior art.

From the jury's verdict of patent validity, we must presume that the jury concluded that Union Oil failed to prove by clear and convincing evidence that claims 1, 2, and 4 were anticipated by the Stoller patent. *See Perkin-Elmer*, 732 F.2d at 893, 221 USPQ at 673; *Railroad Dynamics*, 727 F.2d at 1516, 220 USPQ at 939. Under the instructions of this case, this conclusion could have been reached only if the jury found that the Stoller patent did not disclose each and every element of the claimed inventions. Having reviewed the evidence, we conclude that substantial evidence does not support the jury's verdict, and, therefore, Union Oil's motion for JNOV on the grounds that the claims were anticipated should have been granted.

The Stoller patent discloses processes for making both urea-phosphoric acid and urea-sulfuric acid fertilizers. Example 8 of Stoller specifically details a process for making 30-0-0-10 urea-sulfuric acid products. There is no dispute that Example 8 meets elements b, c, and d of claim 1, specifically the steps of adding water in an amount not greater than 15% of the product, urea in an amount of at least 50% of the product, and concentrated sulfuric acid in an amount of at least 10% of the product. Verdegaaal disputes that Stoller teaches element a, the step of claim 1 of "providing a non-reactive, nutritive heat sink." As set forth in claim 2, the heat sink is recycled fertilizer. 2

The Stoller specification, beginning at column 7, line 30, discloses:

Once a batch of liquid product has been made, it can be used as a base for further manufacture. This is done by placing the liquid in a stirred vessel of appropriate size, adding urea in sufficient quantity to double the size of the finished batch, adding any water required for the formulation, and slowly adding the sulfuric acid while stirring. Leaving a heel of liquid in the vessel permits further manufacture to be conducted in a stirred fluid mass.

This portion of the Stoller specification explicitly teaches that urea and sulfuric acid can be added to recycled fertilizer, i.e., a heel or base of previously-made product. Dr. Young, Union Oil's expert, so testified. Verdegaaal presented no evidence to the contrary.

Verdegaaal first argues that Stoller does not anticipate because in Stoller's method sulfuric acid is added *slowly*, whereas the claimed process allows for rapid addition. However, there is no limitation in the subject claims with respect to the rate at which sulfuric acid is added, and, therefore, it is inappropriate for Verdegaaal to rely on that distinction. *See SSIH*, 718 F.2d at 378, 218 USPQ at 689. It must be assumed that slow addition would not change the claimed process in any respect including the function of the recycled material as a heat sink.

Verdegaaal next argues that the testimony of Union Oil's experts with respect to what

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Stoller teaches could well have been discounted by the jury for bias. Discarding that testimony does not eliminate the reference itself as evidence or its uncontradicted disclosure that a base of recycled fertilizer in a process may be used to make more of the product.

[1] Verdegaaal raises several variations of an argument, all of which focus on the failure of Stoller to explicitly identify the heel in his process as a "heat sink." In essence, Verdegaaal maintains that because Stoller did not recognize the "inventive concept" that the heel functioned as a heat sink, Stoller's process cannot anticipate. This argument is wrong as a matter of fact and law. Verdegaaal's own expert, Dr. Bahme, admitted that Stoller discussed the problem of high temperature caused by

the exothermic reaction, and that the heel could function as a heat sink. 3 In any event, Union Oil's burden of proof was limited to establishing that Stoller disclosed the same process. It did not have the additional burden of proving that Stoller recognized the heat sink capabilities of using a heel. Even assuming Stoller did not recognize that the heel of his process functioned as a heat sink, that property was inherently possessed by the heel in his disclosed process, and, thus, his process anticipates the claimed invention. *See In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981); *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 229 (CCPA 1971). The pertinent issues are whether Stoller discloses the process of adding urea and sulfuric acid to a previously-made batch of product, and whether that base would in fact act as a heat sink. On the entirety of the record, these issues could only be resolved in the affirmative.

On appeal Verdegaal improperly attempts to attack the status of the Stoller patent as prior art, stating in its brief:

Verdegaal also introduced evidence at trial that the Stoller patent is not prior art under 35 U.S.C. §§ 102(e)/103. Professor Chisum testified that the Stoller patent, in his opinion, was not prior art. . . . This conclusion finds support in *In re Wertheim*, 646 F.2d 527 [209 USPQ 554] (CCPA 1981), and 1 Chisum on Patents §3.07[3].

Appellee Brief at 27 (record cite omitted). Seldom have we encountered such blatant distortion of the record. A question about the status of the Stoller disclosure as prior art did arise at trial. Union Oil asserted that, even though the Stoller patent issued after the '343 patent, Stoller was prior art under section 102(e) as of its filing date which was well before the filing date of Verdegaal's application. Professor Chisum never testified that the Stoller patent was *not* prior art, but rather, stated that *he did not know* whether it was prior art. An excerpt from the pertinent testimony leaves no doubt on this point:

Q. (Mr. Sutton): And do you know whether the Stoller patent is prior art to the application of the Verdegaal patent?

A. (Prof. Chisum): I don't know that it is, no.

We find it even more incredible that Verdegaal would attempt to raise an issue with respect to the status of the Stoller patent given that the case was submitted to the jury with the instruction that the original Stoller patent application was prior art. 4 Verdegaal made no objection to that instruction below, and in its appeal briefs, the instruction is cavalierly ignored.

In sum, Verdegaal is precluded from arguing that the Stoller patent should not be considered prior art. *See* Fed. R. Civ. P. 51; *Weinar v. Rollform Inc.*, 744 F.2d 797, 808, 223 USPQ 369, 375 (Fed. Cir. 1984), *cert. denied*, 105 S.Ct. 1844 (1985); *Bio-Rad Laboratories, Inc. v. Nicolet Instrument Corp.*, 739 F.2d 604, 615, 222 USPQ 654, 662 (Fed. Cir.), *cert. denied*, 469 U.S. 1038 (1984). 5 After considering the record taken as a whole, we are convinced that Union Oil established anticipation of claims 1, 2, and 4 by clear and convincing evidence and that no reasonable juror could find otherwise. Consequently, the jury's verdict on validity is unsupported by substantial evidence and

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cannot stand. Thus, the district court's denial of Union Oil's motion for JNOV must be reversed.

Conclusion

Because the issues discussed above are dispositive of this case, we do not find it necessary to reach the other issues raised by Union Oil. 6 In accordance with this opinion, we reverse the portion of the judgment entered on the jury verdict upholding claims 1, 2, and 4 of the '343 patent as valid under section 102(e) and infringed.

REVERSED

Footnotes

Footnote 1. Section 102(e) provides:

A person shall be entitled to a patent unless--

....
(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent

....
Footnote 2. Claim 4 is written in terms of approximate percentages of all reactants by weight of the end product. No argument is made that the process of claim 4 would result in a fertilizer product any different from that disclosed by Example 8 of Stoller.

Footnote 3. There is no dispute that the percentage of heel described in Stoller meets the percentage of heat sink required by the claims.

Footnote 4. The jury instruction read:

Stoller filed two patent applications -- an original application on October 30th, 1978, and a second on February 7th, 1980. Under the patent laws, the claims of the 343 patent are invalid if you find that the original application (Exhibit BL) anticipates the process claimed in the 343 patent.

Footnote 5. Union Oil also argues that Verdegaal's counsel misled the jury by its closing rebuttal argument:

ut I think it's important to keep in mind that [Stoller] couldn't have been a prior patent because it issued a month after the Verdegaal patent had issued.

We disapprove of Verdegaal's tactic which would form the basis for a grant of a motion for a new trial but for our conclusion that outright reversal of the ruling on the motion for JNOV is in order.

Footnote 6. It should not be inferred that all of these issues were properly before us. Union Oil appears to assume that on appeal it may dispute the resolution of any *issue* which is denominated an "issue of law" even though it was not raised in its motion for JNOV. This is incorrect. *See Railroad Dynamics*, 727 F.2d at 1511, 220 USPQ at 934.

- End of Case -

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of good behavior. **b.** Moral or ethical standards or judgments. **3.** A fixed or predetermined policy. **4.** A rule or law concerning the functioning of natural phenomena or mechanical processes. **5.** A basic source. See Usage Note at **principal**. [*< Lat. principium*.]

prin-ci-pal (prin'sə-pald) *adj.* Based on, marked by, or manifesting principle.

prink (prɪŋk) *v.* To primp. [*Prob. < prank, adorn*.] — **prink'er** *n.*

print (prɪnt) *n.* **1.** A mark or impression made by pressure. **2.** Something marked with an impression. **3a.** Lettering or other impressions produced in ink. **b.** Matter so produced; printed material. **c.** Printed state or form. **4.** A design or picture reproduced by printing. **5.** A photographic image transferred to a surface, usu. from a negative. **6.** A copy of a film made from a negative. **7.** A fabric with a stamped dyed pattern. *v.* **1.** To press (e.g., a mark or design) onto a surface. [*< Lat. premere, press*.]

print-a-ble (prin'tə-bəl) *adj.* **1.** Capable of being printed or of producing a print. **2.** Fit for publication.

print-ed circuit (prin'tɪd) *n.* An electric circuit in which the conducting connections have been printed in predetermined patterns on an insulating base.

print-er (prin'tər) *n.* **1.** One whose occupation is printing. **2.** A device that prints text or graphics on paper.

print-ing (prin'tɪŋ) *n.* **1.** The art, process, or business of producing printed material. **2.** Matter that is printed. **3.** All the copies of a publication, such as a book, that are printed at one time.

printing press *n.* A machine that transfers images onto paper or similar material.

print-mak-ing (prin'tmākɪŋ) *n.* The artistic design and making of prints, such as woodcuts. — **print'mak'er** *n.*

print-out (prin'taʊt) *n.* *Comp. Sci.* Printed output.

pri-or (pri'ər) *adj.* **1.** Preceding in time or order. **2.** Preceding in importance or value. [*Lat.*]

pri-or (pri'ər) *n.* A monastic officer in charge of a priory. [*< Lat., superior*.]

pri-or-ess (pri'ər-ɪs) *n.* A nun in charge of a priory.

pri-or-i-tize (pri-ɔr'i-tɪz, -ɔr'i-) *v.* **-tized, -tiz-ing.** To arrange or deal with in order of importance. [*PRIORIT(Y) + -IZE*.] — **pri-or-i-ti-za-tion** *n.*

Usage: Although *prioritize* is often criticized for being associated with corporate or bureaucratic jargon, resistance to this verb appears to be waning, probably because it offers a useful way of saying "arrange according to priority." In 1997, 53 percent of the Usage Panel approved the word in the sentence *Overwhelmed with work, the lawyer was forced to prioritize his caseload*.

pri-or-i-ty (pri-ɔr'i-ti, -ɔr'i-) *n., pl. ties* Precedence, esp. by order of importance. **2.**

established right to precedence. **3.** Something deserving prior attention.

prior to *prep.* Before.

pri-or-y (pri'ər-ɪ) *n., pl. -ies* A monastery governed by a prior or a convent governed by a prioress.

prism (prɪzəm) *n.* **1.** A polyhedron with parallel, congruent polygons as ends and parallelograms as sides. **2.** A transparent solid, usu. with triangular ends, used for separating white light into a spectrum. **3.** A cut-glass object, such as a pendant of a chandelier. [*< Gk. prisma*.] — **pris-mat'ic** (prɪz-māt'ɪk) *adj.* — **pris-mat'i-cal-ly** *adv.*

pris-on (prɪzən) *n.* A place where persons convicted or accused of crimes are confined; jail. [*< Lat. prēnsio, a seizing*.]

pris-on-er (prɪzən-ər, prɪz'nər) *n.* **1.** A person held in custody or captivity, esp. in a prison. **2.** One deprived of freedom of expression or action.

prisoner of war *n., pl. prisoners of war* A person taken by or surrendering to enemy forces in wartime.

pris-sy (prɪs'i) *adj.* **-sily, -sies.** Excessively prim and proper. [*Perh. blend of PRI(M) and (S)SY*.] — **pris-si-ness** *n.*

Pris-ti-na (prɪs'tɪ-nə) A city of S Yugoslavia, the chief city of the Kosovo region. Pop. 155,000.

pris-tine (prɪs'tɪn, prɪ-stēn) *adj.* **1.** Remaining in a pure state; uncorrupted. **2.** Of or typical of the earliest time or condition; primitive or original. [*Lat. pristinus*.]

prith-ee (prɪth'ē, prith'e) *interj.* Archaic Please. [*< (I) pray thee*.]

priv-a-cy (prɪvə-si) *n.* **1.** The condition of being secluded from others. **2.** Secrecy.

priv-ate (prɪv'at) *adj.* **1.** Secluded from the sight, presence, or intrusion of others. **2.** Of or confined to the individual; personal. **3.** Not available for public use, control, or participation. **4.** Belonging to a particular person or persons. **5.** Not holding an official or public position. **6.** Intimate; secret. *n.* Any of the lowest enlisted ranks, as in the US Army. [*< Lat. privatus, not in public life*.] — **priv-ate-ly** *adv.* — **priv-ate-ness** *n.*

private enterprise *n.* Business activities unregulated by state ownership or control.

priv-a-tyer (prɪvə-tɪər) *n.* **1.** A ship privately owned and manned but authorized to attack and capture enemy vessels. **2.** Such a ship's commander or one of its crew.

priv-a-tion (prɪvə'shən) *n.* **1.** Lack of the basic necessities or comforts of life. **2.** The condition resulting from such lack. [*< Lat. privare, deprive*.]

priv-a-tize (prɪvə-tɪz) *v.* **-tized, -tiz-ing.** To change (e.g., an industry) from government or public ownership or control to private enterprise. — **priv-a-ti-za-tion** *n.*

priv-y (prɪv'i) *n.* A shrub having opposite leaves and clusters of white flowers, widely used for hedges. [*?*]

priv-ilege (prɪv'ɪ-lɪ, prɪv'li) *n.* A special advantage, immunity, or benefit granted to or enjoyed by an individual, class, or caste. *v.* **-leg-ing.** To grant a privilege to. [*< Lat. privilegium*.]

priv-ileged (prɪv'ɪ-lɪd, prɪv'lijd) *adj.* **1.** Having privileges. **2.** Confined to a chosen

group of individuals: *privileged information*.

priv-y (prɪv'e) *adj.* **1.** Made a participant in something secret. **2.** Belonging to a person; such as the British sovereign, in a private rather than official capacity. *n., pl. -ies* An out-house. [*< Lat. privatus, private*.]

prize (prɪz) *n.* **1.** Something offered or won as an award for superiority or victory, as in a contest or competition. **2.** Something worth striving for or aspiring to. *adj.* **1.** Offered or given as a prize. **2.** Given or worthy of a prize. **3.** Outstanding. *v.* **prized, prize-ing.** To value highly; esteem. [*< ME pris, PRICE*.]

prize (prɪz) *n.* Something, esp. an enemy ship captured during wartime. [*< OFr. prise*.]

prize (prɪz) *v.* **prized, prize-ing.** To move with a lever; pry. [*< ME prise, instrument for prying*.]

prize-fight (prɪz'fɪt) *n.* A match fought between professional boxers for money.

prize-fight'er *n.* — **prize-fight'ing** *n.*

prize-win-ner (prɪz'wɪn-ər) *n.* One that wins a prize. — **prize-win'ning** *adj.*

pro (prō) *n., pl. pros* **1.** An argument in favor of something. **2.** One who takes an affirmative position. *adv.* In favor; affirmatively. [*< Lat. pro, for*.]

pro (prō) *Informal* *n., pl. pros* **1.** A professional. **2.** An expert. *adj.* Professional.

pro- *pref.* **1.** Acting in place of; *pronoun*. **2.** Supporting; favoring: *prorevolutionary*. [*< Lat. pro, for*.]

pro- *pref.* **1.** Precursor of: *proacaine*. **2.** Anterior; in front of: *prognathous*. [*< Gk. pro-*.]

prob-a-bil-i-ty (prɒb'ə-bɪl'i-ti) *n., pl. -ties* **1.** The quality or condition of being probable; likelihood. **2.** A probable situation, condition, or event. **3.** Statistics A number expressing the likelihood that a specific event will occur.

prob-a-ble (prɒb'ə-bəl) *adj.* **1.** Likely to happen or to be true. **2.** Likely but uncertain; plausible. [*< Lat. probare, prove*.] — **prob-a-bly** *adv.*

pro-bate (prɒ'bət) *Law* *n.* The process of establishing the validity of a will. *v.* **-bated, -bat-ing.** To establish the validity of (a will). [*< Lat. probare, prove*.]

pro-ba-tion (prɒ-bə'shən) *n.* **1.** A trial period in which a person's fitness, as for membership in a group, is tested. **2.** Law The release of a convicted offender on the condition of good behavior. [*< Lat. probare, test*.] — **pro-ba-tion-al** *adj.* — **pro-ba-tion-ar-y** *adj.*

pro-ba-tion-er (prɒ-bə'shə-nər) *n.* A person on probation.

pro-ba-tive (prɒ-bə-tɪv) *adj.* **1.** Serving to test or prove. **2.** Furnishing evidence or proof.

probe (prɒb) *n.* **1.** An exploratory action, expedition, or device, esp. one designed to investigate an unknown region. **2.** A slender, flexible instrument used to explore a wound or body cavity. **3.** A thorough examination or investigation. See *Syns* at *Inquiry*. *v.* **probed, prob-ing** **1.** To explore with or as if with a probe. **2.** To delve into; investigate. [*< Lat. probare, test*.]

pro-bi-ty (prɒ'bɪ-ti) *n.* Integrity; honesty. [*< Lat. probus, upright*.]

prob-lem (prɒb'ləm) *n.* **1.** A question to be considered, solved, or answered. **2.** A situation, matter, or person that presents perplexity or difficulty. *adj.* Difficult to deal with or control:

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